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THE CANCER PROBLEM.¹

By JULIAN SMITH, M.D., M.S., B.Sc. (Melbourne),
Honorary Consulting Surgeon, Saint Vincent's
Hospital, Melbourne.

I BRING to you, as a result of my recent journey to the Old World, a message which, if you have followed your literature, will be familiar to you. But it seems to me so important that a word of mouth delivery will give it the pith and point that it deserves.

This message has to do with the grave problem of malignant growths. It has to do with some research work being carried out in connexion with the subject. It has also to do with the curative measures at present being adopted in the battle against cancer.

It must be that every one of you when attending these difficult cases has pondered in distress upon the possible nature of the disease; as to whether, for instance, it is microbic in origin; what part heredity plays in it; what part chronic irritative trauma plays and so on. It would indeed seem good practice to settle these questions as the first step towards rational treatment; but a review of the present situation suggests that methods of control of malignant disease may well be established long before the basic nature of the disease is fully recognized. In fact, the human mind may be as capable or incapable of the ultimate concept as it is in the case of life itself.

The microbic theory of cancer has always been attractive. As you know, most of the discussion has centred round Gye's work on the long known chicken sarcoma. You may remember that he has separated two elements which, when injected together into the pectoral fascia of the fowl, cause fresh sarcoma. Now one of these elements increases by cultivation *in vitro*. It passes a filter which will hold back tumour elements; it is thus ultra-microscopic. It is in fact a "virus." Other workers, however, point out that this virus behaves to ultraviolet light more like an enzyme does and, moreover, Murphy at the present Cancer Conference reported that he has been able to induce chicken sarcoma by means of testicular extract under conditions that render virus infection impossible. There must exist, therefore, a specific growth substance which will induce tumour formation from normal tissues.

Tumour Immunity.

In regard to tumour immunity I found my visit to Lumsden at the Lister Institute full of interest. He has been at work for some time on the question of tumour immunity and is using the rat and the mouse for this purpose. It appears that by injecting fragments of mouse cancer into the rabbit a specific antibody is produced in the rabbit serum which is intensely toxic to mouse cancer cells and much less lethal to normal mouse tissue. More-

over a more comprehensive demonstration is possible by injecting human breast cancer into sheep. The resulting sheep serum will kill in a few minutes the cells of mouse cancer and of rat sarcoma, but leaves unaffected the normal cells of heart and kidney of these animals used in tissue cultures as controls. Conversely if the rabbit serum, mentioned above as toxic to mouse cancer, be applied to tissue cultures of human breast cancer, it causes death of these cells also. And again the serum of sheep inoculated with rat sarcoma will, if properly treated, kill rat sarcoma cells, but not normal rat tissue. Furthermore, some rats may become by treatment highly immunized against rat sarcoma. The serum of these animals damages the cells of mouse cancer, whilst a normal rat serum will not. These are the results of experimentation with sera on various tissue cultures perpetuated on glass slides by an ingenious technique. But it has been possible to give *in vivo* confirmation of these observations. Lumsden has caused many rat sarcomata of the transmissible type to disappear by injecting them *in situ* with antihuman breast cancer serum and also in one instance a spontaneous rat mammary carcinoma was so cured. It should be noted that this particular serum contained antimalignant elements, but no antirat tissue elements.

These facts seem to indicate that tumour cells of any variety from any animal have a common antigenic factor capable of inducing antimalignant qualities in sera under appropriate conditions.

In passing it should be here mentioned that workers with Rous and chicken sarcoma do not appear to have met so far with any particular success in attempts to induce immunity against that disease. But reverting to the mouse and the rat, we find a further interesting fact. The mouse and the rat are nearly related species and it results that a mouse cancer, when inoculated into a rat, grows sometimes for a few days. The rat tissues fail for a time to recognize fully its "mousey" nature. Ultimately, however, the tumour dies. Further attempts on the rat with mouse cancer fail and this rat's serum now proves to be highly toxic to mouse cancer cultures *in vitro*. Normal rat serum is not. To go one step further, when an homologous transplant is made, that is, rat cancer to rat, the animal attempts recovery, but is usually defeated because the freely growing tumour absorbs the antibodies as soon as they are made. In the main the cells are so like normal rat cells that the body does not wake up to the fact that an enemy is abroad. But if the tumour is thoroughly removed, absorption stops and antibody manufacture continues; for a series of rats so treated are now more resistant to cancer inoculation, especially if the rats are adult and the tumour not very virulent in type.

Now what happens to a rat with two tumours, one only of which is treated? The experiment is simple and convincing. A rat has a tumour induced by inoculation in each hind leg. One of these is cured

¹ Read at a meeting of the Victorian Branch of the British Medical Association on December 12, 1928.

in situ by the local injection of antiserum or of formalin. This cure is followed by disappearance of the other tumour. There is a proviso, however. This happy result does not ensue if the second tumour is allowed to reach large proportions. It is to be noted that amputation of one limb with the tumour does not cause disappearance of the second tumour. Moreover, a test transplant in this animal's flank takes, but it fails to live in the former animal cured without amputation, thus showing that the immunity is general. Lumsden's idea is that during gradual cure by local treatment, the dying tumour cells act like a vaccine and induce antibodies. Further experiments of his seem to show that the immunity depends on a serum body on the one hand and a cystase produced by the leucocytes which become educated to secrete it. This secretion seems best produced under more or less anaerobic conditions.

Now all these facts are as may be and they apply very much more to implanted tumours than to the spontaneous variety and they apply with certainty to rats and mice only, but they suggest serious thought to the clinician when human tumours are being caused to disappear by irradiation. May it not be that a high rate of destruction would swamp the general defensive mechanism with the products of disintegration, lower general resistance and favour metastasis? What is the optimum rate of recession of a malignant growth under, say, radium treatment? It is a fact, though a rare one, that a human cancer may disappear spontaneously. It is a fact, also very rare, that a cancer may disappear from one part of the body without treatment, when a distant cancer in the same patient is regressive under irradiation. But on the other hand, I saw recently in Monod's clinic in Paris a woman of fifty making a progress report after successful radium treatment for uterine cancer applied three years previously; that is to say, she looked and felt well and presented no discoverable sign of recurrence. But she now has early carcinoma of the left breast with nipple retraction. In her case one must assume that she had no general immunity induced from the cervical cure or that it has died out. And, further, it is abundantly clear from personal observation in many radium clinics that progressive metastases are by no means rare, even when the primary lesion has been most effectively destroyed by radium. Whether some early metastases disappear or at any rate are held in check by the effects of radium cure of the primary lesion, must be the subject of further inquiry. I had the great advantage of seeing Keyne's work on mammary carcinoma at Saint Bartholomew's Hospital. Up to the present a series of fifty patients with cancer, both of so-called operable and inoperable types, are shown at various periods after being treated by his system of radium puncture without operation. On reviewing these, I had the distinct impression that in the patients with advanced growths duration of life was longer and

much more comfortable than in those untreated or in those surgically treated, particularly in the matter of the less frequent or less evident appearance of distant metastases.

As a possible bearing on this aspect of a very complex problem, one careful piece of work carried out at the Middlesex Hospital is noteworthy. Pieces of the malignant breast tumour from a patient were irradiated lethally, were macerated and then returned subcutaneously to the patient. Though nothing like brilliant results ensued, Dr. Helen Chambers informed me that metastases were checked and became remarkably chronic, but that death from the disease, though often long delayed, always followed.

Other experiments of Dr. Chambers have had bearing upon the very interesting growth promoting factor in tumour tissue. Thus, if rat sarcoma tissue receives a lethal dose of irradiation and is then introduced fresh into a normal rat, the tissue dies and is absorbed and the rat is thereby made immune to sarcoma. But if this dying tissue is cultivated *in vitro* for five days prior to inoculation, the animals so treated become increasingly susceptible to sarcoma according to the amount inoculated. Extended experiments show that this effect is due to autolytic products from the dying cancer cells sensitizing the rat instead of producing immunization. It has been shown that the growth promoting substance will withstand boiling for ten minutes and is a stable chemical body produced under conditions that preclude its being a living agent. It is a product of autolysis of the sarcoma cells and resembles a vitamin. It brings to light the fact that growing cells produce growth promoting substance and by their very metabolism make more growth possible. That is to say, however much nutritive material is supplied, the growth promoting substance must also be present if growth is to continue. Many workers have pointed this out since the inception of the idea early in this century and the same effects apply to yeast bios in the absence of which yeast cells fail to grow. Some observers consider that the growth stimulin is best or perhaps only developed when the cells are crowded together, intercellular substance lacking and the blood supply poor. *In vitro* experiments show that tumour cells grow more slowly than normal cells, but that the addition of growth stimulants to the cells make them grow faster than normal tissues in culture. Metastasis would thus seem to imply the transference of sufficient cells *en masse* from the primary focus to carry the community effect with them to the new site; single celled emboli on this theory would be more likely to die.

My remarks so far on tumour immunity will have served to throw what glimmer of light is possible on the basic nature of the malignant cell change. You will all admit that the living cell is possessed normally of very extended powers of progressive growth. Witness the progress of division of the ovum up to the adult; witness the growth of the

lactating breast which often exceeds that of many cancers of that organ; so also the many compensatory hypertrophies and for that matter the filling in and healing of wounds.

What is it that normally stops growth under these conditions? The tissue tension theory seems satisfying. The cells stop growing because of growth restraints in the nature of mutual pressure, demands for function, distribution of nutriment and the control of the organization as a whole. There is much experimental evidence* to support this idea. Such a mechanism must be perpetually in operation in every living being. It must be continually at work in every functional, regenerative and inflammatory overgrowth taking place in the body. It is not surprising that this mechanism should sometimes get out of gear, the restraints fail and the liberated cell become endowed with a progressive and ultimately irreversible power of growth, which is malignancy.

Cancer Metabolism.

Much work has been done on the chemistry of the cancer cell, but beyond showing a higher lactic acid content and a low respiration rate, nothing has emerged which throws light of primary importance on the nature of malignant disease. The changes observed so far are rather those of quantity than of kind.

Carcinogenic Stimuli.

Now, when we are seeking to discover the cause of malignant disease, we cannot disregard the enormous amount of work being done in investigating and recording the multifarious conditions under which cancer occurs. There immediately appears the outstanding almost ever present condition of chronic irritation or, if you like, oft repeated mild trauma. This has been a matter of clinical belief from the time of Virchow. It has received modern proof all over the world by tar experiments on animals. So long as tar is applied often enough to the skin of the mouse and allied animals, cancer will arise. Some strains of animals are more susceptible than others. The specific body in the tar is very minute in quantity. A long list of other irritants now exists and includes chemical irritants, acids, alkalis, aniline dyes, arsenic, indican, none of them being as potent as tar. Then again we have the tragic history of X ray burns. I am more than half afraid that ultra-violet overdosage will earn a similar condemnation. Nor in this connexion can the obvious influence of parasites in causing animal cancer be ignored and the sunlight effects on hand and face are well known. And what would happen to the case incidence of cancer of the mouth if tobacco, alcohol, bad teeth and syphilis were given up?

Instances can be and are now being multiplied indefinitely and to show what I mean, let me quote from a recent report of the Home Office, which, amongst other things, gives an account of 360 cases (mostly scrotal) in five years occurring in the

cotton mule-spinning industry where a high temperature, moisture and flying lubricating oil prevail.

Precancerous State.

The essential change seen in the tissues as a response to these baneful influences is what is called the precancerous state. It includes, as Ewing says, a passive hyperæmia, a replacement fibrosis and a degenerative proliferation. The normal cell boundaries are ultimately broken down and malignant disease ensues. A sort of pathological momentum is created that no resistance of the surrounding tissues can overcome.

Embryonic Foci.

But no consideration of the whole question is complete unless Cohnheim's theory is mentioned. Beyond doubt many tumours arise from embryonal remains, misplaced portions of organs and so forth. These have the capacity more than normal cells for malignant overgrowth. They appear to require no chronic irritative influence, of an external sort at any rate, to induce the change, though, of course, an internal endocrine influence may be the stimulin at work.

Heredity in Cancer.

We must now approach the vexed question of heredity in cancer. So far as humans are concerned no outstanding facts emerge on first consideration. True is it that *glioma retineæ*, *enchondroma*, *neurofibroma* and others can be definitely ascribed an heredity factor. And certain families appear to be prone to neoplastic changes as a whole, but distinct evidence of hereditary predisposition to cancer in previously normal tissues in man is wanting. Much more certain facts, however, come to light in animal studies where a selective breeding is possible, but which, for various reasons, has not been adopted in man.

It is possible for instance to create by selective breeding a strain of mice so intensely predisposed to cancer that many of the females develop mammary cancer. In some experiments of Loeb the proportion affected reached as high as 70%. On the contrary it is possible to breed strains with mammary cancer incidence in the females of practically zero. The astonishing thing is that if these 70% females are castrated before puberty, their cancer rate falls to zero. Castration at puberty causes some reduction of the rate, but after puberty it has no effect on cancer reduction. A further striking fact is that although, as stated, a fairly early post-puberty castration does not reduce the case incidence, the cancers do not appear until months later. There is in fact a latent period. This latent period effect is seen in tar cancer of skin also and in human mouth cancer in those cases ensuing long after teeth and tobacco influences are removed. I cannot help thinking that this latency effect will prove to be an essential factor included in the full formula for cancer when it becomes known. It is seen in the mouse, rabbit and rat skins when

the cancers appear long subsequent to the external tar irritation.

Such delayed effects seem also to be quite common in man in the case of the tars and derivatives and are certainly so in the case of X rays acting on normal tissues ultimately becoming malignant. May I mention here, though it is not fully apposite, the fact, brought to light by the study of tar effects in man, that it is increasingly clear that tar derivatives may and do become absorbed and by the circulation affect distant parts. Thus some benzene compounds of the aniline group enter the system and are excreted in modified form by the kidneys with a subsequently induced malignant change in the vesical mucosa. And in the same connexion it has been suggested that similar carcinogenic effects might be produced on actively growing organs such as breast and uterus. Again, in smokers there is no reason to think that the low distillation products should confine their effects to the mouth; the active principle is small in amount and might easily extend its influence to pharynx, oesophagus, stomach and even further. Collis has in fact propounded his Promethean theory of cancer based on these considerations; in this age, where fire, coal and tobacco, petrol, oils and the distillation products of their many activities are all pervading, it is certainly worth remembering. Reverting to heredity and Loeb's mice, it is seen that there are two factors at least in the aetiology of the special mammary cancer. One is an hereditary quality, exalted by selective breeding, inherent in the cell make up; the other an internal environmental factor (recurrent endocrine stimulation) analogous in its action to external environmental factors, for example, of tar in skin cancer. In both there is an oft repeated stimulus to overgrowth, ultimately leading to cell Bolshevism.

When attempts are made to inquire further into the quality of the heredity factor by means of experimental crossing of high and low cancer rate strains, some observers deduce the opinion that the cancer factor is a monohybrid recessive and others that it is a monohybrid dominant; but Loeb's very critical work on mammary cancer shows that the more likely state, judging from the F_1 and F_2 generation figures, is that there are multiple factors at work in tumour heredity, but that the Mendelian study of the question is rendered difficult by the varying environmental factors such as variable ovarian activity, intensity of breeding and nursing and even the general vigour of one or another strain of mice. He believes that occasional sudden mutations also occur and thus further complicate the inquiry. Miss Slye has a strain of mice very prone to lung cancer; so much so that she was inclined to regard the hereditary factor as the sole cause, but later she admits an exciting factor small in amount.

Loeb has expressed his conception of the aetiology of cancer by the formula $H + S$ where H equals the hereditary factor and S the stimulation environmental factor. Both factors may be and usually

are complex. In any case $H + S$ equals a constant and therefore where H is large, S need only be small and *vice versa*. It is a useful idea and, if remembered, will lead to clearer thought on many occasions.

Now if the facts of the case make it difficult to express in simple terms the hereditary effect in cancer under the comparatively simple conditions as applied to selectively bred animals, how much more difficult must the inquiry be in the case of human cancer where practically no genuinely selective mating exists. Nevertheless, the observed occurrence of rare types of cancer in sisters, the appearance of cancer in identical twins, the characteristic differences in the distribution of cancer in white and black races in identical localities, suggest that conditions are analogous in this respect among humans and animals.

I can imagine, for instance, that it would be possible by selection to breed a race of men very prone to cancer in one organ or on the other hand a race particularly immune to cancer in that organ, despite all the stimuli that could be applied; but, as I have said, this selective state, owing to migration and intermarriage, does not exist. Ewing has described the state of affairs best when he says that he regards the human race as heterozygous, that the susceptibility to cancer is widely distributed amongst men and women who will generally acquire cancer if subjected to the appropriate exciting causes. In any case hereditary influence does not cause the disease, but only structural peculiarities rendering certain organs specially prone to cancerous change.

Aetiology Summarized.

We are now in a position to summarize the aetiological side of the cancer problem. We can say that the normal living cell seems to possess very great powers of reproduction; it also possesses within the requirements of each species, the power of differentiation; also it possesses or is subject to an inhibition effect by virtue of which growth ceases when an adult form is reached. During normal life, including all repairs, these three factors act in benign unison and all is well. But when oft repeated calls on this benign mechanism are made, whether as the result of functional action or of chemical or physical irritants or nematodal or microbic onslaughts, it occasionally happens that this superb balance of power is upset. Which of the three elements predominates is not as yet clear. We have seen evidence that the cell loses restraint. Whether this is inherent and signifies an acquired greater power of reproduction or on the other hand greater power to produce growth-promoting substances which may mean the same thing, or whether there is a reduced resistance on the part of the opposing tissues is not clear. Dedifferentiation, if that term is biologically permissible, seems an accompaniment and there results an anarchic cell which is more or less embryonal, which can infiltrate and which can produce metastasis. It is more

like the trophoblast, the cell of the ovum, which invades the decidua, absorbing it as it goes. But even here inhibition fortunately triumphs over infiltration, leading to degeneration of the syncytium. Occasionally, however, syncytium does not degenerate, restraint or inhibition is lacking and then, as you know, the most malignant of all tumours develops.

Practical Deductions.

Several practical points must now be apparent. From the research view point it emerges that it is very likely that there is no single cause for all cancers and therefore, as Ewing says, fundamental studies aiming to solve the whole problem at one stroke are probably doomed to failure; as there is no one exciting cause for cancer, so there is no one great secret of the cancer cell.

Again, it is obvious that cancer at the beginning is not a general process. It is only locally that one group of cells runs wild. Thus if they are completely removed by excision a cure will result.

If they are completely destroyed *in situ* by irradiation or chemically, a cure also results. As we have seen, this method of cure may leave in its train an immunity in certain cases.

The Action and Utility of Radium.

I have used the phrase "destroyed *in situ* by irradiation." In the case of an accessible malignant tumour and speaking in terms of modern technique this phrase practically means radium puncture, a device whereby suitably charged and screened radium containers are so placed in and around the tumour that all parts are subjected to a practically uniform field of γ rays. By "accessible tumours" is not necessarily meant superficial only, but in addition any tumour that can be rendered accessible by any surgical operation of access. Now modern clinical work is producing a steadily increasing amount of evidence showing that many malignant growths can be made to disappear permanently when so treated. It has been so long accepted in many clinics on the Continent as to be a commonplace and it is becoming so in England. On the contrary, inaccessible metastases cannot receive such optimum irradiation and still remain the unconquered element in cancer. I do not propose to discuss now the practical side of treatment, as that may well form the subject for a later meeting, where the necessary time will be available. The question as to whether X rays or radium or surgery or any combination of them is the best form of treatment in this or that region can there be inquired into, but it can here be stated that the exceedingly short electro-magnetic waves emitted by radium produce a selective action on malignant cells and that a suitable dose of these rays will cause these cells to disappear without producing a permanently harmful effect on the normal tissues around.

This is such a striking fact that it merits close study from every point of view. It has received much attention from research workers because it is

felt that valuable light may be thrown on the nature of cancer. It was sought, for instance, to determine whether the curative irradiation worked by direct action on the cells or indirectly on the surrounding normal tissues. Lacassagne and Monod in Paris and independently Donaldson and Canti in London have carried out investigations on carcinoma of the cervix. The lesions received the full irradiation and thereafter pieces of the tissue were removed daily. I have had the pleasure of meeting Canti many times and cannot do better than quote his words on the findings. He writes:

Immediately after irradiation mitosis had disappeared, but it soon reappeared in greater numbers, reaching a maximum about four days later. At this time sections showed the majority of the cells in active mitosis. In a few cells this appeared normal, but in the majority marked changes were seen including the following: irregular arrangement of the chromosomes, disorganization of the spindle, the threads often being scattered in the cytoplasm; lag in the migration of chromosomes, that is to say, instead of all leaving the equator at one time, some were left behind; unequal distribution of chromosomes where daughter cells were forming; multipolar division with three or more centrosomes; multinucleate cells; cells of gigantic size and broken down cells.

In addition there is a general enlargement of all the cells and their nuclei. After the sixth day this violent exacerbation of mitosis quietened down and there gradually appeared masses of cell *débris*, the general formation of the tissue still resembling the structure of the original growth. As time progressed, it was increasingly difficult to find even traces of growth and at the end of a month to six weeks it was the rule to find that it had entirely disappeared from the *cervix uteri*.

Regarding tissue reaction, the tumours commonly showed before treatment finger-like processes of growth with completely degenerated core filled with phagocytes, while beyond the growing edge there was the usual mass of small round cells. After treatment the polymorphonuclear cells were intimately intermingled with *débris* of the growth and were acting as phagocytes. In many cases the phagocytes were smaller than the cancer cells, had entered them and worked from within. Thrombosis is constant in the smaller vessels. About as soon as the scavenger work is over, the surrounding halo of small round cells also fades and is replaced by plasma cells, fibroblasts and their descendants. Later this granulation tissue settles down into a dense scar. Similar appearances result from X ray treatment, but they are later in development and not so well marked. These investigations clearly showed that some of the cells were destroyed at once, but that the majority of the cells lived for a time before dying. Again, *in vitro* examinations of irradiation effects on mitosis in embryos showed a "delayed lethal action" in a similar way. As a further fact Strangeway and Hopwood have found, using X rays, that one hundred erythema dose failed to kill outright more than a few of the cells. Those that are thus killed, become the "breaking down cells." They are spherical and show small pro-

cesses of protoplasm protruding in all directions, giving a raspberry appearance; the nucleus breaks up and portions of chromatin are seen in the bleb-like processes. Gradual disintegration ensues. Many experiments seem to suggest that these immediate victims are those just about to begin mitosis during the irradiation and by inference this is the vulnerable stage in the mitotic cycle. And some have made the deduction from this that it is desirable to diminish the intensity and lengthen the duration of irradiation when treating a growth, thereby nipping each mitotic crop in the bud, as it were.

On the other hand it may just be that the growing cell dislikes long continued weak irradiation more than short lived strong dosage. Much research has centred round this question of dosage. It must be remembered first of all that the delivered dose is not the same as the absorbed dose and the harder the ray, the greater the difference between them. Then again the rate of delivery of a given total dose of energy is important. Below a certain intensity the tissues, normal and malignant, withstand bombardment indefinitely. All of us, for instance, are undergoing a bombardment of a million ions per second from cosmic rays of space. Moreover, the tissues vary in sensitivity. Lymphocytes and reproductive organs succumb first and muscle, cartilage and nerve tissue last. Even cancer cells vary in their resistance to irradiation, the more embryonal yielding first. Another question undergoing investigation is the relationship of wave length to sensitivity. There is laboratory evidence to show that wave length is important. If it be that the shorter the wave, the greater the selectivity on cancer, then the advantage is decidedly with radium well screened with platinum. Then again one very sinister aspect of the dosage problem must be given prominence. It has been proved that malignant growths, when given repeated sublethal doses, often develop increased power of resistance and in some cases have been found experimentally to withstand two and a half times the normal lethal dose. The clinical application is obvious. It would be very natural if you wondered how radium acts; what its physical action on the tissues really is.

As you know, γ rays liberate negative electricity in any medium they traverse, that is, they ionize it. This, however, is not a perfectly uniform process, for at any instant some regions are ionized and some are not. Conceivably this may lead to variations in hydrogen ion concentration of the tissues and as they are normally quite unaccustomed to this, the cells may thus be permanently disorganized.

So much then for the irradiation effect on the cancer cells. Now what of the tissues around them? Experiments again offer help. Murphy and others have shown that a tumour in animals, highly transplantable, fails to take if the site of inoculation is previously irradiated. The tumour transplants of course receive no rays and, again, a more or less inverse experiment (Mottram) is this. Normal transplants are made and the tumours allowed to take

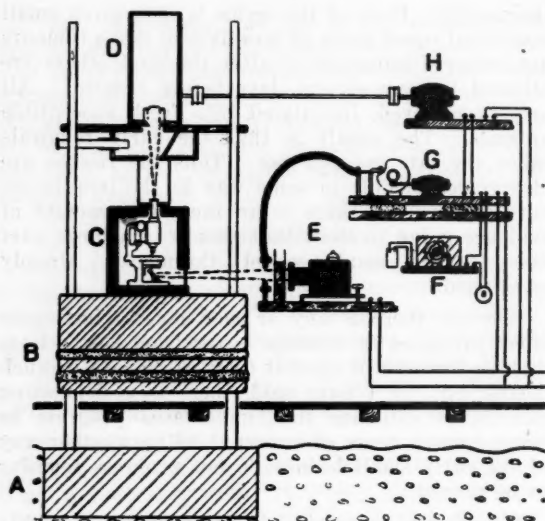
thoroughly. Each of the series is then given small non-lethal equal doses of irradiation. Some tumours are removed immediately after this and others are allowed to stay several days before removal. All are, as removed, inoculated into fresh susceptible animals. The result is that the early removals take; the late ones do not. Thus the tissues are clearly responsible in some way in the irradiation cure of cancer. There is an increasing weight of evidence going to show that this is in a large part due to the small vessel thrombosis already mentioned.

Whether there is any or ever general immunity effect produced in humans is far from clear. Rats may be immunized against their sarcomata by such means, but, as I have said, there is a depressing amount of evidence that metastases progress in many human cases of cancer. As to whether any of the early small lesions do not progress remains to be proved.

Though the transmissible rat sarcoma is highly virulent, it is not autologous and is apparently sufficiently dissimilar to its host to permit of immunization effects. Tumours in man are spontaneous and being autologous are so like the host in quality as to render immunization effects weaker and rarer. Spontaneous tumour material in animals is scanty and necessarily limits this most important of all research work; but, so far as it has gone, no very encouraging facts on tumour immunity have emerged. The necessity is to develop a wonderfully selective antiserum or some agent which will render the tumour cell more foreign in qualities to those of the host.

The Canti Film.

I now have the great pleasure of introducing to your notice one of the outstanding features of the recent Cancer Conference held in London. It has become known as the "Canti film." That ardent and ingenious worker has sought to overcome the tedium of necessarily lengthy visual observations on tissue cultures, to which in the hands of many workers we owe much of our ever increasing knowledge of malignant disease. He conceived the idea of making fast motion cinema microphotographs. The exposures at intervals varying up to, say, sixty seconds each can be made over long periods of time extending into days. The completed film may be run at normal speed which would then portray events at varying rates up to 960 times. Moreover, these may be examined time and again at will as points arise and by running them backwards recognized terminal changes may be traced to their inception. I have seen the original apparatus which in the making involved several months' hard and patient work and an expert knowledge in mechanics, electricity and optics. It practically fills a room twelve feet square and suggests Heath Robinson. It is very complete and will even ring a bell when it needs attention. The accompanying simplified diagram represents the essen-



SIMPLIFIED DIAGRAM OF CANTI'S APPARATUS.

A = foundation of concrete; B = antivibration device of concrete and rubber sponge; C = lead incubator containing microscope; D = cinematograph camera; E = illuminant; F = electric clock; G = motor Number 1, making exposures and starting; H = motor Number 2, for driving film. The time recording clock, shutter and lamp are to the left and not shown.

tials. Vibration is overcome thus. A concrete mass, cast in the earth beneath, supports four steel posts, piercing, but not touching the floor. These in their turn support a slab of concrete on which lie alternate layers of sponge rubber and concrete. The top concrete slab is heavy and carries four steel vertical rods at its corners. These rods support a horizontal teak slab pierced at its middle to allow the photographic beam to reach the cinema camera which faces downwards on the teak, neatly over the hole and minus its workaday lens.

Directly under the camera is placed a lead-lined, electrically heated incubator containing the microscope, tissue culture and radium as needed. The light beam is generated by a lamp and condenser system, independently supported and adjustable for centralization on the microscope substage mirror. The beam is cooled by a green water filter and is allowed to pass at the critical moment by an ever-set camera shutter and enters the incubator horizontally by a small glass window. Time is recorded photographically on the back of the film at one corner by the aid of a watch suitably placed and illuminated, by another ever-set camera shutter and lens and finally by two masks complementary to one another, one large at the back of the film with the corner removed and one small on the front corresponding to that corner, the two totalling in area a single segment of the film. For one cycle of operations resulting in one picture there are the following items: The opening and closing of two photographic shutters, the advancement of the film one segment after the exposure is made. Each cycle

is begun by a master electric clock which delivers impulses at set intervals. Each impulse works a relay which starts an electric motor operating a spindle on which are mounted two cams and four mercury dips. The cams are so adjusted as to push and then release two long antinuous release wires at the right moment and thereby to open and close the two camera shutters. Dip number 1 operates a graded self starter for the motor itself, dip number 2 turns on the photographic lamps in good time, dip number 3 sends a single impulse to motor number 2. Dip number 4 cuts out motor number 1 just as it brings cams and dips back to starting point after one revolution. The impulse already mentioned from dip number 3 starts a relay which closes electric circuit operating motor number 2. This causes one revolution of a flexible antivibration shaft connected with the camera and advances the film one segment and then automatically cuts itself out until reactivated by dip number 3.

Canti's first release includes representations of growing chick periosteum and Jensen's rat sarcoma as seen growing in tissue cultures. Then follow portions of film showing the effects of radium on these structures. Phagocytosis is also well shown in a degenerating nerve specimen and the final strips portray very beautifully cell structure by means of dark ground illumination.

The whole of this arresting film is very largely self-explanatory; it is hardly necessary to remind you that the events portrayed are speeded up enormously, in some cases so much as 960 times, and that with a three metre image on the screen represent a magnification in some parts up to 78,000 diameters. As it proceeds I shall demonstrate important points.

In summarizing it I must remind you that the irradiation used was intense and unscreened and included therefore β rays. First then the normal fibroblasts of periosteum show little change, they stop movement, but the outline of cell and nucleus remains clear. A few, however, disintegrate. The wandering cells on the other hand suffer badly, become stationary and break up. When mitosis is in action this also is arrested by the radium.

Further, in the rat sarcoma specimen all cells both mobile and fibroblastic are affected at about the same interval of time as the wandering cell of normal tissue. We thus have as a result of this method of study a direct observation of the selective action on malignant cells. It seems further that the effect on wandering cells of normal tissue is similar to that on cancer. This new method of the study of living tissue that Canti has elaborated would appear to open up many valuable fields of inquiry not necessarily on cancer, but on the influence of any agent on any cell that will grow *in vitro*. Our knowledge for instance of antiseptics and drugs may be usefully widened.¹

¹ At this stage Dr. Julian Smith showed the Canti film.

Conclusion.

As I finish, let me say that I am conscious of having touched all too lightly and with a time limited lack of detail on the splendid research work going on in the world, but I cannot let this opportunity pass without expressing a whole hearted admiration for all those patient workers in a field where the pay is often ludicrously small, where the discouragements are many, the successes infrequent and the epoch making discoveries the rarest of prizes and where many a brilliantly conceived and expertly performed piece of work comes to naught and goes, as one whimsical worker remarked, down the sink, never to be heard of. Their undying courage should be a lesson to all clinicians and stimulate us towards systematized record in that part of our work which may even here and there supplement their brilliant whole-time efforts.

We shall then say with the greatest living poet:

And only the Master shall praise us, and only the Master shall blame;
And no one shall work for money, and no one shall work for fame;
But each for the joy of the working, and each, in his separate star,
Shall draw the Thing as he sees It for the God of Things as they are!

CREeping ERUPTION OR LARVA MIGRANS IN
NORTH QUEENSLAND AND A NOTE ON THE
WORM GNATHOSTOMA SPINIGERUM
(OWEN).

By G. M. HEYDON, M.B., D.P.H., D.T.M. & H.
(From the Australian Institute of Tropical Medicine,
Townsville.)

HISTORICAL.

THE first description of the creeping eruption or larva migrans was by Lee⁽¹⁾ in England in 1874; he called it creeping eruption. Crocker later proposed the name larva migrans. Other names are creeping disease, dermatitis linearis migrans and hyponomoderma. A number of cases has now been reported from many parts of the world. It appears from a useful review by Austmann⁽²⁾ in 1926 that about ninety cases had been reported up to that time, but many additions have since been made. Parasites belonging to three different groups have now been proved to cause creeping eruption in man: (i) The larvæ of certain flies of the family *Cestridæ*, (ii) immature worms of the genus *Gnathostoma* and (iii) the infective or third stage larvæ of certain hookworms.

Cestrid Larvæ.

The larvæ of bot-flies of the genus *Gastrophilus* were recovered and identified from some of the earlier cases. According to Austmann⁽²⁾ *Gastrophilus* larvæ had been satisfactorily identified from ten or a dozen patients with creeping eruption, at least two species being involved, *Gastrophilus hæmorrhoidalis* and *Gastrophilus equi* (*Gastrophilus intestinalis*). The larvæ of other cestrid flies have also been reported from lesions in man resembling creeping eruption. Those of *Hypoderma bovis*, for

instance, are said to give rise occasionally to creeping tracks, but of a deeper type than the tracks of typical creeping eruption which are within the epidermis.

The statement that creeping disease or larva migrans is due to fly larvæ gained access to the text books and it became the practice to attribute cases "unproved ætiology to them.

Cases definitely proved to be due to *Gastrophilus* larvæ seem all to have occurred in temperate climates of the northern hemisphere, according to Austmann north of the fortieth parallel of latitude. The subjects have often been persons brought into contact with horses.

It may be noted that according to Ferguson⁽³⁾ four species of *Cestridæ* have been reported in Australia including *Gastrophilus intestinalis* (*Gastrophilus equi*) and *Gastrophilus veterinus*, both with a wide distribution in eastern Australia, though how far north he was unable to say. Mr. F. H. Taylor, of this Institute, informs me that *Gastrophilus veterinus* has been reported in Queensland, but not, as far as he knows, *Gastrophilus intestinalis*. *Hypoderma* has not become established in Australia.

Immature Gnathostomes.

From tracks characteristic of creeping eruption or from superficial abscesses or swellings immature nematode worms of the species *Gnathostoma spinigerum* Owen and *Gnathostoma hispidum* Fedtschenko have been recovered. According to Morishita and Faust⁽⁴⁾ seven undoubted cases had been reported up to 1925 and they were confined to China, Japan, Siam and Malaya. Cases of creeping eruption of uncertain ætiology have been attributed to gnathostomes just as have others to fly larvæ.

The Larvæ of Certain Hookworms.

It now appears that the form of creeping eruption due to the larvæ of certain hookworms is probably much the commonest of the three; it is no rarity like the other two kinds, but is quite common in some parts of the world, characterized by a hot and moist climate for part of the year at least.

Its recognition in recent years is due to the work of Kirby-Smith, Dove and White. In their papers in 1926⁽⁵⁾⁽⁶⁾ they described the finding of a larval nematode in serial sections of pieces of excised skin from cases of creeping eruption in Jacksonville, Florida, where the disease is common. The larva was given the provisional name of *Agamonematodum migrans*. It was suspected to be the third stage larva of a nematode parasite of some animal and after much further work Dove and White⁽⁷⁾ produced creeping eruption in themselves with larvæ cultured from the faeces of cats and dogs from a locality where creeping eruption was prevalent. These dogs and cats were found to harbour *Ancylostoma braziliense* de Faria and smaller numbers of *Ancylostoma caninum* (Ercolani). Finally, in their last paper⁽⁸⁾ Dove and White report the production of creeping eruption

resembling in all respects that naturally occurring in Florida and other southern parts of the United States of America by the application to the skin of infective larvæ of *Ancylostoma braziliense* obtained from faecal cultures of cats infected experimentally with this worm only. On the other hand they were unable to produce the condition with larvæ of *Ancylostoma caninum*.

It may be noted also that Fulleborn⁽⁹⁾ has produced creeping eruption by the application to his own skin of the infective larvæ of a quite different species of hookworm, *Uncinaria stenocephala* (Railliet), commonly harboured by dogs in Europe; there is no proof at present that cases due to these larvæ occur naturally.

Previously Reported Australasian Cases.

In spite of the prevalence of creeping eruption in North Queensland few cases have been reported in Australasia. Cilento⁽¹⁰⁾ reported an interesting case in a European child in Rabaul, New Britain, in which two mites resembling *Rhizoglyphus* were found. Looss⁽¹¹⁾ mentions that a *Rhizoglyphus* was found in the lesions of ground itch and believed by its discoverer, Dalgetty, to be the cause of that condition; its usual habitat was said to be decaying substances on the ground.

On the appearance of Cilento's paper Hamilton and Ferguson⁽³⁾ reported another case seen in 1921, also a child from New Guinea, attacked on both feet; an earlier case in an adult attributed by the patient to the bite of a fly in Fiji was also described. Pieces of skin were excised from the child and evidently included the organisms since cure resulted. Ferguson dissected one piece of skin and made serial sections of the other, but did not find any organism. The photograph seems to me very like the cases in North Queensland which, like those in Florida, are probably due to hookworm larvæ from cats and dogs. To find such larvæ, especially by dissection, is an extremely difficult matter. The failure by such a worker as the late Dr. E. W. Ferguson to find anything renders it very improbable that either cestrid or gnathostome larvæ were the cause.

South African Cases.

In a recent paper Cawston⁽¹²⁾ reports that creeping eruption is not uncommon in parts of Natal, where, moreover, as in Queensland, it is popularly known as "sandworm." He states that the photographs published by the investigators in Florida⁽⁵⁾ "leave one in no doubt as to the identity of the eruption with that with which we are well acquainted along the Natal coast, particularly in and around Durban and at Isipingo." From one case only an organism was recovered, "an elongated larva resembling that of an unidentified nematode." He believes that the condition may be acquired from contact with damp soil contaminated by nematode infested domestic pets.

CREEPING ERUPTION IN NORTH QUEENSLAND.

Creeping eruption popularly known as sandworm is not uncommon in Townsville and other parts of

the north Queensland coastal area. Every wet season affected persons turn up at the Australian Institute of Tropical Medicine through the courtesy of the medical men in the town, but these are only a fraction of the persons affected, many of whom do not seek any medical advice.

On seeing the account by Kirby-Smith⁽⁶⁾ of the earlier work in America I was convinced by the photographs and especially by the epidemiological features that the diseases here and in Florida are the same. After seeing the further work⁽⁷⁾ throwing suspicion on the larvæ of the hookworms of cats and dogs investigations were begun here which have proved that the larvæ of both *Ancylostoma braziliense* and *Ancylostoma caninum* from either dogs or cats are able to cause creeping eruption. As already mentioned Dove and White in their latest paper⁽⁸⁾ have also furnished proof that the larvæ of *Ancylostoma braziliense* are a cause, but got negative results only with those of *Ancylostoma caninum*.

The features of the disease in North Queensland closely resemble those described in the Gulf States of North America and in Natal. The cases show a seasonal prevalence. As the dry and cooler season progresses, they become scarcer, to reappear after the establishment of the wet and hot weather of the north Queensland summer. As the name sandworm implies, the disease is often attributed to going barefoot on sandy ground at the sea beaches or elsewhere. Other patients will state that they acquired it from the ground near or beneath their homes. The ground underneath the houses in Townsville which are often elevated on piles, has commonly a loose or sandy surface and is usually slightly moist throughout the wet season even where rain water cannot flow directly on to it; it is often a resort of cats and dogs. Shower baths are often situated beneath the houses and visited with bare feet. The disease is oftenest seen about the feet, but is not confined to them and it is especially prevalent in children who, of course, more often go barefoot than do adults.

A word may be inserted here concerning some of the hookworms and their larvæ. The two hookworms *Ancylostoma braziliense* de Faria and *Ancylostoma caninum* (Ercolani) are common parasites of both dogs and cats in warm climates; neither is a normal parasite of man, though in many countries *Ancylostoma braziliense* has been found occasionally living in his intestine in small numbers together with a species proper to him; even *Ancylostoma caninum* has, according to Manalang,⁽¹³⁾ been found in man in the Philippines.

Infective ancylostome larvæ having penetrated the epidermis are able to travel through the tissues with facility, as can be seen under the microscope in a piece of excised thin skin. Looss⁽¹¹⁾ concluded from his experiments that when large numbers of larvæ enter the skin of their normal host most of them penetrate no further than the dermis and subcutaneous tissue, where the majority soon enters

lymphatic or venous vessels and is carried off to the lungs; a minority fails to do so and a few of them may penetrate deeper tissues and sometimes arteries and become widely scattered. But it is possible that when the larvæ of the cat and dog hookworms penetrate the skin of man, an abnormal host, a much larger proportion of them fails, at any rate for a long time, to take this route to the lungs; some of these take to travelling within the epidermis and give rise to the tracks characteristic of creeping eruption.

Many kinds of worms behave in an abnormal manner when the animal invaded is not the proper host; they may wander about the body as if unable to find a spot to their taste and tend especially to appear in the cutaneous tissues.

Loose and sandy soil is a favourable environment for the development and survival of these hookworm larvæ, as it is for those of the human hookworms. They cannot withstand complete desiccation, but in the infective stage will live in soil which to sight and touch is very nearly dry. But the sand of the actual sea beach below high water mark can hardly be a favourable environment for hookworm larvæ; the presence of more or less salt in it and its translucency to the rays of the tropical sun are both unfavourable factors. It may be pointed out, however, that in Townsville people often go barefoot to and from the beach as well as while on it; they will then naturally think they acquired the infection on the beach itself, where most time was spent.

The cats and dogs of Townsville are very generally infested with both *Ancylostoma braziliense* and *Ancylostoma caninum*.

More than sixty cats and kittens were killed and examined at the end of the wet season in connexion with other work. The young kittens harboured no hookworms or a few only. But forty-four adult and half grown cats had an average count of forty-three; very few of them were altogether free from hookworms and both species were present in the great majority. In two-thirds of the cats *Ancylostoma caninum* was more numerous than *Ancylostoma braziliense*. In one cat, an adult female, 552 hookworms, made up of both species, were found.

Only one dog has been subjected to autopsy here, an adult. The hookworms found numbered 242; *Ancylostoma braziliense* was about twice as numerous as *Ancylostoma caninum*; the latter worms were noticeably plumper than those from cats. In several other dogs, however, the presence of numerous ancylostomes has been proved by the examination of the larvæ from faecal cultures.

It may be mentioned also that in several dogs and one cat examined at Rabaul, New Britain, I found both these species of hookworms.

Cases in Townsville.

One of the most interesting cases of creeping eruption seen was that of Mr. M., a business man in Townsville.

Towards the end of January, 1928, he worked in his garage under his motor car from about 3 to 5.30 p.m., lying on his back which was clothed only in an openwork singlet. The uncovered ground in the garage was of loose sandy earth and slightly moist. A favourite resort of a dog belonging to Mr. M. was this very spot beneath the car. From faecal cultures of this dog numerous larvæ belonging to the genus *Ancylostoma* were isolated. Before Mr. M. had finished the work under the car he noticed a stinging sensation; this persisted and itching appeared later on in the evening and the same night "pimples" were discovered on his back.

I first saw the patient through the kindness of Dr. H. J. Taylor nineteen days after that on which infection occurred. The itch and soreness had been such as to interfere seriously with sleep. There were numerous papules and pustules on the back and arms, raised red lesions of irregular shape and size often with a spot of pus in the centre. From a number of the lesions very clearly marked sinuous tracks of variable length arose, narrow fluid filled tunnels within the epidermis, running along the centres of erythematous ribbons; in some the fluid was purulent, in others merely serous. The first tracks in this case were not noticed for many days after the appearance of papular lesions. The number of separate tracks which appeared during the course of the disease was roughly estimated at about fifty; on a single occasion I counted more than twenty. The number of larvæ which gained entrance must therefore have been very considerable, since in many places the lesions formed did not include tracks. The condition is illustrated in Figures I and II.

The patient described the features of the characteristic itch; it comes and goes and has some tendency to be worse at night or when hot and sweating. It is often localized to a point a few millimetres beyond the advancing end of a track and conveys the impression of something moving and tickling intensely at that spot. Close inspection of such a spot will sometimes reveal a tiny elevation and that the track is really continuous right up to it, though for the last few millimetres it is only a very inconspicuous mark in the epidermis which later on becomes obvious as serous effusion takes place into it and the bordering erythema appears; by that time the larva will very likely have moved further on. The rate of progress is very variable as halts occur at intervals and for periods of any duration.

From this patient after injection of "Novocain" two small pieces of skin were dissected from spots just beyond the ends of visible tracks where he could feel the presence of larvæ. These tracks did not recur, so that it may be assumed that the larvæ were successfully removed. The attempt made to recover a living larva from one of the pieces of skin by immediate dissection was not successful. The fragments were then preserved in weak formalin and a start made to dissect them bit by bit under a microscope with such thoroughness that a hookworm larva could not be missed. After several days' work an accident destroyed the specimens before anything had been found. The presence of such easily seen parasites as fly larvæ or young gnathostomes was excluded.

Dove and White⁽⁸⁾ failed to recover any larvæ by dissection; they were successful only with serial sections (five pieces of skin out of forty-eight sectioned) in which the generic determination of the

larva when found is quite impossible. I believe, however, that attempts by other methods to get the living larva from the skin might succeed. The proof that this form of creeping eruption is due to hookworm larvæ lacks completeness so long as a larva actually obtained from a lesion has not been examined in a living condition, when in my opinion it would be possible to determine with certainty whether it belonged to the genus *Ancylostoma*.

The mere immersion of the piece of excised skin in warm water or saline solution might induce the larva to emerge into it, as happens with tissues containing the larvæ of parasitic nematodes of many species. Another method which might be tried would be to place the piece of skin on the surface of an agar plate; the uncovered Petri dish would then be placed on a warm surface at a temperature of about 40° C.; a pronounced temperature gradient would thus be created and the hookworm larva should migrate to the bottom of the agar. This method works well with larvæ of *Ancylostoma duodenale* which have penetrated the skin of a live rat some hours previously. Infective hookworm larvæ outside the body are very strikingly thermotropic and respond to even a feeble temperature gradient within a suitable range with great delicacy. There is a possibility, however, that larvæ which have resided long in the skin, may have lost their thermotropism; physiological changes must occur in them, although but little morphological alteration takes place. For instance, they are often able to survive in the skin for a very much longer period than they could outside the body at the same temperature; it is possible that nutriment is taken in. A differential leucocyte count of Mr. M., when

first seen nineteen days after infection, revealed 15% of eosinophile cells. Repeated examinations of the fæces from this date onwards for nine months never revealed any hookworm ova.

This case bears a striking resemblance to one reported by Dove and White⁽⁸⁾ in which also an infestation of the back was acquired by working on damp ground under a motor car.

Another case worth mentioning was that of a professional man in Townsville. He also attributed his infection to an occasion in January when he was working under his car. Shortly afterwards a single elongated papular lesion appeared near the iliac crest. This did not develop further, though slightly itchy at times, until about ten weeks later, when it suddenly became very itchy and a track made its appearance. No dogs were kept, but cats frequented the place.

The history given by another patient seen through the kindness of Dr. A. Breinl was that when working in his garden he sometimes got the knees of his trousers impregnated with damp earth. He kept no dogs or cats and believed that none came into his garden. When first seen, an itchy papular eruption had been present on one knee for about three weeks, but tracks

had only just made their appearance. The lesions, as shown in the photograph (Figure III), consisted of an area of dermatitis five centimetres (a couple of inches) in diameter with a number of very prominent red tracks round it.

I believe that in this case a considerable number of larvæ must have gained entrance within a small area; they were probably derived from a single animal stool which had been deposited at the spot knelt on.

TREATMENT.

Without treatment the condition persists or is liable to recur as

long as living larvæ are present near the site, which may be for many months. The popular treatment in Townsville is the application of iodine, but it is often ineffective. Another remedy used is to rub in turpentine; this is said to be sometimes effective.

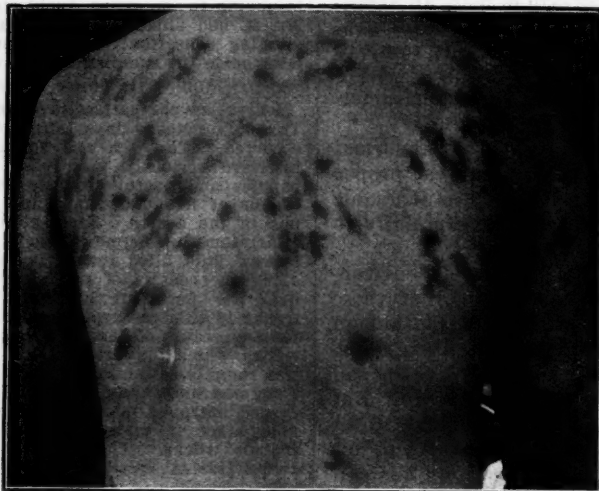


FIGURE I.
Showing lesions in Dr. Taylor's patient.



FIGURE II.
Showing lesions in Dr. Taylor's patient.

In Mr. M.'s case "strong" iodine solution was applied twice a day for sixteen days with little effect. Two larvæ, as already mentioned, were removed by excision; Dr. H. J. Taylor tried the injection of "Novocain" without excision, but the larvæ survived. He then tried freezing with ethyl chloride, with so much better results that it was thereafter relied on solely. By this means the larvæ were gradually killed off one by one and the condition completely cured about twelve weeks after the date of infection. The method was to freeze with the spray the exact spot near the end of a track occupied by a larva. In many cases this larva never afterwards showed any sign of life, but sometimes a second attack on it was necessary, apparently when the exact spot was missed or the larva was deeper down below the epidermis. Mr. M. informed me that he found the rubbing in of turpentine over the site of a larva relieved the itch, apparently making the larva quiet, but usually it recovered within a few days; he found that iodine was not effective even to this extent.

Dr. A. H. Baldwin cured a track in his own foot by scarification followed by the application of oil of chenopodium, but the reaction produced was severe.

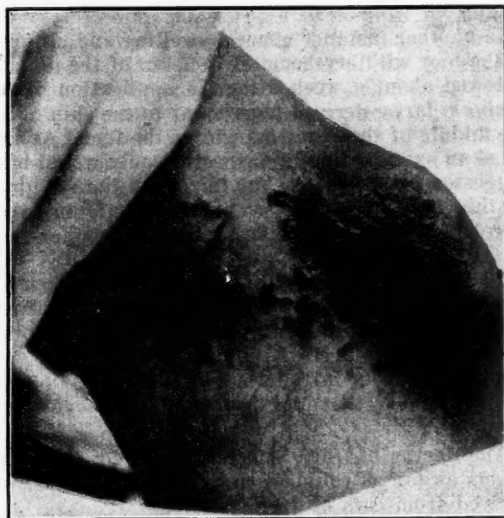


FIGURE III.
Showing lesions in Dr. Breinl's patient.

EXPERIMENTAL PRODUCTION OF CREEPING ERUPTION.

Two men of north European descent were the subjects of the experiments; they are here referred to as A. and B. It should be noted that A. had a light infestation with *Ancylostoma duodenale* which had been present for about two years; B. harboured no worms, though he had had an ascaris infestation eleven years previously.

The first experiment consisted in the application above the knee of subject A., where it was retained overnight by a bandage, of about 120 grammes of earth collected from as nearly as possible the same

spot in the garage which had infected Mr. M. three weeks before. A single itchy papular lesion resulted which lasted for about three weeks and was exactly like some of those later produced with larvæ of known species; no tracks were formed.

Hookworm larvæ obtained from pure cultures of the eggs of *Ancylostoma braziliense* and of *Ancylostoma caninum* respectively were next tried. They were got from a number of cats and from one dog. The animals were killed with illuminating gas and the hookworms picked out of the small intestine and placed in physiological saline solution. The species of each female worm was then determined by examination of the buccal orifice. When the females had all been placed in separate containers according to species, they were washed thoroughly to remove any adherent *débris* which might possibly contain eggs of the other species and then torn up with needles to free the ova from the uteri; cultures were then made with earth and faeces both sterilized in a helminthological sense by heat. After six or seven days the infective larvæ were isolated in pure water by a modification of the Baermann method which has been described elsewhere.⁽¹⁴⁾ They were used within a week of isolation for the experiments, in each of which a number of larvæ varying between five and twenty-nine were placed on a single small area of skin not more than 2.5 or 5.0 centimetres (an inch or two) in diameter. One or two turns of cotton bandage were closely applied to the skin and the larvæ placed on it by means of a pipette; the bandage was kept moist for about half an hour and then allowed to dry.

Ten experiments were made during March and April on different parts of the skin of subject A., five of them with larvæ of *Ancylostoma braziliense* and five with those of *Ancylostoma caninum*. On subject B. two experiments were made with *braziliense* and one with *caninum* larvæ.

In every trial larvæ penetrated and lesions appeared which were indistinguishable from those of the naturally acquired disease in Townsville. Tracks were not always formed, but neither are they in persons infected in the usual way. It is probable that in many cases, especially of light infestation, no tracks appear; but the nature of the eruption then remains obscure and it is not recognized as sandworm. Even when a track is formed, its prominence varies much, depending on the appearance of erythema and œdema along its course and on the degree to which it becomes distended with fluid. The mere passage of a hookworm larva 0.02 millimetre in diameter through the epidermis causes, of course, no visible track until these reactions are induced, as they usually are within a short time after the larva has passed; but sometimes they are so slight that the track remains inconspicuous.

Sections made by the investigators in Florida and also by Fulleborn have shown that the position of a track is the deeper part of the epidermis.

One or more well defined but not prominent tracks appeared in three of the ten experiments on

subject A.; in two of them the larvæ responsible were those of *Ancylostoma caninum* and in the other those of *Ancylostoma braziliense*. With subject B. tracks appeared in one of the three experiments and were due to *braziliense* larvæ, five of which had been applied to the inner margin of the foot; in this instance the lesions persisted with track formation from time to time for five and a half months.

The lesions produced other than tracks exhibit considerable variety. The earliest ones to appear are commonly slight itchy flat papules or wheals, sometimes little more than macules; they resemble mosquito bites; each one apparently marks the site of entry of a larva. Lesions of an inflammatory type usually follow, prominent firm red papules or more diffuse thickenings of the skin. In subject B. some of the lesions became vesicular, but pustules were not formed in these experiments. Diffuse redness and œdema of the surrounding parts often appear, but are very variable features. Intermittent itching is a constant feature at all stages and is often of the characteristic kind already described. Itching or pricking sensations appearing in from one-half to several hours are usually the first evidence of the penetration of the larvæ and are followed at a shorter or longer interval by the earliest visible signs. Sometimes no symptoms or signs whatever appear for more than twenty-four hours.

In these experiments the total duration of the skin affection which was never treated in any way, varied from three or four days only up to five and a half months. Periods of quiescence alternating in an irregular manner with periods of activity are the rule; the persistence of even a slight local lesion appears to indicate that a living larva is still present and may renew its activity at any time. Change in the character or position of a lesion indicates movement, vertical or lateral, of the larva responsible for it. Wherever a larva remains for a time, a papule appears if it is in or near the epidermis, a more diffuse thickening if deeper down. Lateral movement takes place either through the epidermis or deeper, a track being formed in the former case. Tracks may appear at any time, early or late.

The number of larvæ entering a given area and the amount of scratching indulged in have a conspicuous influence on the character and severity of the eruption.

Processes of an allergic as well as of an inflammatory or infective type are involved in the production of the various features presented by this eruption. There is no precise knowledge concerning the antigenic substances and possibly toxins arising from the larvæ. Substances discharged through the excretory pore may be of importance; as Looss⁽¹¹⁾ noticed, the so-called cervical glands which are cells connected with the excretory apparatus, become much more prominent shortly after hookworm larvæ enter animal tissues. Some bacteria are probably often carried in by an entering larva, although the

fact that the larvæ of hookworms commonly emerge from their sheaths in the act of penetrating the skin must partially clean them; the larvæ of *Uncinaria stenocephala* are an exception according to Goodey.⁽¹⁵⁾

Differences in the behaviour of the two species of larvæ were apparent at any rate in subject A., on whom five experiments were made with each species. The most striking was the much greater tendency of the larvæ of *Ancylostoma caninum* to give rise sooner or later to reactions accompanied by œdema in tissues, deep as well as superficial, situated at some distance from the site of penetration. For instance four days after the application of ten *caninum* larvæ derived from the dog to the inner aspect of the middle of the right forearm the papular lesions at the site of entry had begun to diminish, but œdema of the back of the hand appeared; in the course of the next few days the swelling moved to the thenar eminence which felt tense and itchy and there appeared to be signs of the presence of a larva not far beneath the surface. At twenty-five days, after signs had everywhere quite disappeared, burning, itching and tension suddenly appeared in the palm, followed next day by swelling and stiffness of the little finger, apparently due to effusion into the sheath of the flexor tendon.

In another instance general swelling and stiffness of the foot with erythema of the skin of the dorsum followed about a week after the application of ten *caninum* larvæ derived from a cat to the skin about the middle of the inner margin of the foot. At this stage an examination by inspection only would have suggested a septic foot, but in reality the reactions of this type caused by wandering *caninum* larvæ were suggestive of an allergic or toxic rather than an infective process.

It may be mentioned that in the course of a number of other experiments with various extracts of hookworms, both adult and larval, it was found that the two subjects A. and B. reacted only very slightly to their intradermal application, in spite of the fact that A. harboured *Ancylostoma duodenale*.

The larvæ of each species produced the same effects as far as could be noted, whether they were derived from cats or from the dog.

The larvæ which penetrated subject B. gave rise to an eosinophilia which reached 9%; the total number of both species applied to his skin was only nineteen. As in the case of Mr. M., repeated examinations for months by the Clayton Lane method failed to reveal any ova in his faeces.

The larvæ of both the human hookworms may give rise to affections of the skin; those of *Necator americanus* are the cause of the condition known as ground itch and by other names and a similar condition may be caused, especially in miners, by larvæ of *Ancylostoma duodenale*. It seems, however, as far as can be gathered from the literature of the subject, that a conspicuous eruption is produced only when a large number of these larvæ enter

together or when secondary infection occurs. When only a few larvæ penetrate, the earlier lesions of an urticarial character are not usually followed by persistent lesions of an inflammatory type. The explanation already suggested is that it is exceptional for these larvæ to remain long in the skin of their proper host.

On subject A. a single experiment was made with larvæ of *Ancylostoma duodenale*, thirteen of which were applied to a small area on the foot. The spots resembling mosquito bites appeared, with definite itchiness and a little erythema and swelling, but there were no papular infiltrations or other persistent lesions. The condition was subsiding by the fourth day and gone in a week. No tracks were formed.

The question arises whether creeping tracks are ever produced by the larvæ of the hookworms of man. Kirby-Smith appears to be of the opinion that they are not or at any rate states that ground itch and creeping eruption in Florida are two clearly different diseases; the human worm in Florida is no doubt *Necator americanus*. Looss, however, maintained long ago⁽¹¹⁾ that creeping eruption may be caused by the larvæ of *Ancylostoma duodenale* and perhaps by those of *Strongyloides stercoralis*. His contention seems to be proved by the observations he records of a case presenting remarkable features, the only one he saw; this was in himself. His full discussion of the literature, however, reveals only one clear description of tracks resembling those of creeping eruption, but caused by the larvæ of human hookworms. This is contained in the following quotation from the Preliminary Report by Ashford, King and Gutierrez, of the first Porto Rico Commission, describing the lesions produced by the penetration of the larvæ of *Necator americanus*:

Shortly after infection a papule forms which often becomes a red line, one to four or even six centimetres long by 0.25 centimetres broad and well raised above the surface. This line may be slit up, upon which serum exudes and a minute canal is laid patent.

Race is possibly one of the factors influencing the incidence both of ground itch and of creeping eruption due to animal hookworm larvæ in different countries. According to the investigators of creeping eruption in Florida, negroes are less susceptible than whites. In New Guinea neither ground itch nor creeping eruption is conspicuous in the natives, in spite of the prevalence of *Necator americanus* in man and of dogs infested with the dog hookworms. Cilento records,⁽¹⁰⁾ however, that creeping eruption is reputed to prevail in a district of New Ireland.

In North Queensland skin lesions are not a feature of hookworm patients; the laity sometimes mistakes a common mycotic disease of the feet, occurring especially between the toes, for ground itch due to hookworm larvæ. This is the well known disease, prevalent in many countries and known by various names, which is due to a fungus identical with or indistinguishable from that causing dthobie itch. In Australia it is sometimes erroneously referred to as *Tinea albigena*.

It appears from the facts collected in this paper that the infective larvæ of several nematodes are capable of producing tracks resembling those of creeping eruption; they are the parasites of carnivores, *Ancylostoma braziliense*, *Ancylostoma caninum* and *Uncinaria stenocephala*, and the human parasites, *Ancylostoma duodenale*, *Necator americanus* and perhaps *Strongyloides stercoralis*.

Most of these species, however, probably seldom give rise to obvious creeping eruption under natural conditions. Skin conditions accompanied by tracks which are inconspicuous, short, or evanescent, will not be classed as creeping eruption clinically. The larvæ which have so far been proved to give rise frequently to prominent persistently advancing tracks are those of *Ancylostoma braziliense*. The experiments here recorded prove that larvæ of *Ancylostoma caninum* may also produce definite tracks, but those formed were neither conspicuous nor long.

It is possible that there may be yet other parasitic nematodes the larvæ of which may cause creeping tracks. Dove and White⁽⁸⁾ experimented with the larvæ of certain nematodes of the brown rat and the cotton rat. At times goats are plentiful and ubiquitous in Townsville and experiments were made with the infective larvæ of two of their common parasites, *Strongyloides papillosus* (Wedl) and *Trichostrongylus instabilis* (Railliet).

The larvæ of *Trichostrongylus instabilis* infect sheep and goats by ingestion, but as the larvæ of the closely allied human parasite *Trichostrongylus orientalis* Jimbo are said to be able to infect by skin penetration and as, moreover, it has recently been found here that in some parts of Queensland *Trichostrongylus instabilis* is a not uncommon parasite of man, it seemed worth while to try the effect of placing the larvæ of this species on the human skin. A large number of vigorous infective larvæ tested in this manner on several occasions produced no effect whatever either subjective or objective in the skin to which they were allowed access. No trichostrongyle ova appeared later in the faeces of this man. About seventy infective larvæ of *Strongyloides papillosus* derived from a goat applied to the human skin just above the internal malleolus gave rise to some slight pricking sensations at the time, but produced no other effects of any kind.

It is evident that aberrant worms or their larvæ need to be kept in mind as possible causes of obscure dermatological or minor surgical conditions, especially in tropical countries. Conditions due to them must often have been attributed to other causes.

In New Guinea and other tropical countries it is not uncommon to find some degree of eosinophilia in white residents in whom no cause for it can be discovered. It may be that some of these cases are caused by the unnoticed entry of helminth parasites of animals; the eosinophilia will persist for a time, even if the parasites are soon lost.

Another recent American paper⁽¹⁶⁾ on creeping eruption has just come to notice. The author produced creeping eruption in sixteen out of eighteen

volunteers by the application to the arm of each of a drop of water containing about one hundred larvæ of *Ancylostoma braziliense*. There is no mention of experiments with *Ancylostoma caninum*. No ova were found in the fæces of any of the subjects, but it seems probable that the examinations were not continued long enough. The paper contains numerous excellent photographs of the skin lesions.

NOTE ON GNATHOSTOMA SPINIGERUM (OWEN).

The two best known species of the genus *Gnathostoma* are *Gnathostoma hispidum* Fedtschenko, a parasite of the pig, and *Gnathostoma spinigerum* Owen, a parasite of carnivores, including the domestic cat and also the dog. Immature forms of both occur erratically in man and may cause creeping eruption. *Gnathostoma siamense* (Levensen) from man is now believed to be a synonym of *Gnathostoma spinigerum*.

Chandler⁽¹⁷⁾ (18) believes that immature gnathostomes are a cause of serious disease in cats in Calcutta, burrowing in the liver and other organs; there is some uncertainty as to their species, but in what appears to be his later expression of opinion⁽¹⁸⁾ he inclines to the view that they are of the species *spinigerum*. It is quite possible, therefore, that a heavy infestation would cause similar serious lesions in man, although hitherto the worms have been discovered only when appearing at the surface of the body.

Ferguson⁽³⁾ stated that he knew of no records of gnathostomes in Australia. It is therefore worth recording that in the stomachs of pigs in Rabaul which are largely the kanaka breed with some admixture of imported stock, I found *Gnathostoma hispidum* not infrequently and also that in about forty cats and kittens in Townsville in which the stomach was examined, *Gnathostoma spinigerum* was present in one instance.

The livers of all these cats were examined for the burrows due to immature gnathostomes described by Chandler, but none was seen. The infected cat was an adult female and appeared to be in good health. A single firm, thick-walled multilocular cyst about four centimetres long was present in the stomach wall and contained nineteen male worms and thirty females. It communicated by two small openings in the mucosa with the lumen of the stomach, but the peritoneal surface was in no way involved.

Chandler⁽¹⁷⁾ and also Clayton Lane⁽¹⁹⁾ state that eggs of *Gnathostoma spinigerum* already contain larvæ before they are laid. This error possibly arose from the examination of worms preserved in a manner which allowed the eggs to continue their development. The contents of the cyst, stomach and rectum of the Townsville cat contained eggs, most of which were in the one-celled, but some in the two-celled stage. Identical eggs were present in the uteri of the worms. The eggs in the fæces were very numerous, approximately equalling in numbers the eggs derived from two hundred and twenty-seven hookworms which were also found in this cat.

The eggs are oval, often with one end more bluntly rounded than the other. They have a transparent shell sparsely covered with minute granulations. At the more pointed end the shell is definitely thinned and over this thin area which serves for the emergence of the larva, is applied a solid basin-shaped cap of transparent material. The eggs measured about 0.065 by 0.037 millimetre; the length excluding the cap was about 0.060 millimetre.

A number of eggs was washed and kept in shallow water at the room temperature of Townsville in summer. In five days under these conditions most of the eggs contained fully formed coiled motile larvæ. In eggs under a coverslip from which air was excluded, development was arrested until the coverslip was removed; a temperature of 37° C. prevented or delayed development and caused the death of many of the eggs within a few days. Some of the eggs were kept in water up to twenty-three days when the contained larvæ were still alive and healthy; a very few of them emerged spontaneously from the eggs and others were freed by pressure in order that they might be examined. They did not appear adapted for free life, though one was observed to be alive in the water after twenty-four hours.

These newly hatched larvæ are enveloped in a very voluminous, delicate sheath, much longer and wider than themselves, which is evidently not moulted cuticle. No transverse striæ were detected either on this sheath or on the cuticle of the larvæ, though the latter show numerous transverse wrinkles. The larva is about a quarter of a millimetre in length, of uniform diameter in the anterior half, while the posterior half tapers gradually to the tail, ending in a blunt, rounded tip. Little internal structure can be seen in the living larva; the rounded anterior extremity is armed with a pointed, partly chitinized structure.

The life history of the worms of the genus *Gnathostoma* is unknown. Their affinities render it very probable, however, that there is an intermediate host, most likely an invertebrate, by the ingestion of which the definitive hosts are infected. The remarkable observations of Chandler⁽¹⁷⁾ point to the possibility that, as is known to happen with some other nematodes, there may be several kinds of animals capable of harbouring the immature worms and acting as further intermediate hosts or as "blind alley" hosts when they devour the first intermediate host or one another. It is likely that the first intermediate host acquires the infection through the ingestion of eggs from the fæces of the definitive host; these are probably not infective until sufficient time has elapsed outside the body for larvæ to develop within them.

Man is probably infected by swallowing an intermediate host, the encysted worms from which may proceed to migrate through his body. It is to be noted that according to Morishita and Faust⁽⁴⁾ the infection has so far been found only in Siamese,

Chinese and Japanese, whose culinary methods and gastronomic habits differ from ours.

The assumption of several writers that infection occurs through skin penetration, by free living larvæ is an improbable one.

Cockroaches of several species, but mainly *Periplaneta americana*, were fed with eggs from the Townsville cat after larvæ had developed within them and dissected three months afterwards, but no larval gnathostomes were found. The intermediate host of a genus allied to *Gnathostoma* found in fish is the pearl oyster.

SUMMARY.

A form of creeping eruption, popularly known as sandworm, and common in the coastal districts of North Queensland is described. It is caused by the infective larvæ of hookworms of cats and dogs.

Some new facts are recorded concerning the occurrence in Australasia and the early development of worms of the genus *Gnathostoma*, the cause of another form of creeping eruption.

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I desire to thank Dr. H. J. Taylor, Dr. A. Breinl and Dr. A. H. Baldwin for their kindness in bringing patients to my notice, and also one of these patients, Mr. M., for his obliging courtesy in submitting to considerable trouble and inconvenience. My thanks are also especially due to Mr. A. J. Bearup, a senior technical assistant at this Institute, who volunteered for a number of the experiments.

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Reports of Cases.

THE SURGICAL TREATMENT OF OSTEITIS DEFORMANS.¹

By A. J. TRINCA, M.D. (Melbourne), F.R.C.S. (England), F.C.S.A.,

Honorary Surgeon to Out-patients, The Alfred Hospital, Melbourne.

THE following series of cases illustrates the subject of bone repair in *osteitis deformans*. Having observed that in this disease, irrespective of age, repair after fracture is unusually rapid and that the new callus formed is of greater density than the diseased bone and that recalcification and repair of the diseased bones seem to occur for some distance along the shaft on either side of the fracture, I determined to make a practical application of these observations. A patient with only one femur involved and with considerable bowing and shortening was treated by cuneiform osteotomy and at the same time as much of the bone as could be reached through a long incision was traumatized by means of a drill and hammer. Cases I and II show that attempts are made at natural cure after trauma. Case III demonstrates the density of the new bone formation and Case IV is that of the patient who was submitted to operation.

Case I.

The patient, a dental surgeon, aged fifty-seven years, sustained a spontaneous fracture of the left femur on getting into his bath. X ray examination revealed *osteitis deformans* in the left femur and right tibia. He was treated by extension in a Hamilton Russell apparatus for four weeks and was then left in bed without any support. Union occurred very rapidly and in seven and a half weeks he could bear his weight on the limb and in eleven weeks from the date of the fracture was able to carry on his occupation of dental surgeon with the same ease as before the injury.

This case illustrates the unusual rapidity of union that occurs in this disease. The type of calcification is denser than that in the diseased bone.

¹ The cases described herein were reported at a meeting of the Victorian Branch of the British Medical Association on September 19, 1928.

Case II.

The second patient whose history need not be given in full, suffered from nine partial fractures in a transverse direction on the convexity of the tibia. The skiagram reveals the presence of *osteitis deformans* and it is clear that calcification in the neighbourhood of these fractures is denser than in the rest of the bone. This suggests that the calcification is a natural protective reaction to the trauma.

Case III.

A female patient, married, fifty-four years of age, sustained a spontaneous fracture of the right femur five years ago. The patient volunteered the information that the fracture "set very quickly." On examination there is a bossy thickening at the site of the old fracture and a well-marked curve. X ray examination reveals dense new bone formation at the site of the fracture and well-marked calcification of the compact bone of the adjoining part of the shaft. In the left tibia the changes typical of *osteitis deformans* may be seen.

This case illustrates the type of bony union which occurs in *osteitis deformans* and the durability of the same.

Case IV.

The patient was a man, aged fifty-four years. He complained of the right thigh becoming curved and progressively shortened for the previous two years. On examination it was seen that the right femur was considerably bowed in an antero-lateral direction. There was shortening to the extent of 6.25 centimetres (two and a half inches) and muscular wasting was also present. X ray examination on February 9, 1928, revealed typical *osteitis deformans* in the right femur with definite anterior and lateral bowing. The left ilium was also involved, but here the changes were less pronounced. The patient was supplied with a walking calliper to prevent weight bearing and further bowing.

On March 12, 1928, cuneiform osteotomy was performed at the site of maximum curvature and the femur was straightened. The bone above and below the site of section was then drilled in various directions for the whole length of the exposed bone in the hope that new bone formation would be stimulated. No mechanical means were adopted to maintain the ends of the bone in apposition other than a Thomas's knee splint for a few days and then Hamilton Russell's extension apparatus. In three weeks there was considerable callus formation with good union. The extension was then removed and massage and movements were commenced. On May 30 the patient was discharged from hospital.

Firm union in this case occurred sooner than in a case of fracture of a normal femur in a man of the same age. The result of the operation was to lengthen the femur by more than 3.75 centimetres (one and a half inches) and to enable the patient to walk in comfort with the aid of a thickened sole. Osteotomy was undertaken without any fear of non-union owing to the observations made in the other three cases that repair of bone takes place with more than the usual rapidity. The new bone laid down at the site of fracture in these cases can be seen in a study of the skiagrams to be denser than the surrounding bone and apparently free from or less involved in the characteristic pathological changes.

SYMMETRICAL UTERUS BICORNIS.

By BERNARD DAWSON, M.D., F.R.C.S. (England),
Honorary Assistant Gynaecologist, Adelaide Hospital.

FAILURE of the Müllerian elements to fuse resulting in various forms of uterine deformity is sufficiently rare to justify the publication of the notes of any such case.

A woman, aged forty-two years, was admitted to the Adelaide Hospital having been recommended by Dr. Cotton,

of Streaky Bay. She was sent for investigation as possibly suffering from malignant disease of the pelvic viscera. She was a married woman who had borne five children; the confinements had all been without untoward incident. She complained of symptoms, of five weeks' duration, which comprised pain in the sacral region and rectum, bearing down sensations in the lower part of the abdomen which were present constantly, occasional lumbar ache and epigastric pain. Three weeks prior to admission she had some yellowish vaginal discharge which lasted three days. She had been losing weight for the previous twelve months. She menstruated with normal loss for five days at regular twenty-eight day intervals, the period being unaccompanied by pain. Her general health was good and nothing abnormal could be discovered in any of her other systems.

On examination it was found that her vaginal outlet was lax with some slight eversion of the vaginal mucosa. The cervix which was hypertrophic, pointed down and back and had been slightly torn on its left and anterior segments. The uterine body was felt definitely inclined to the right and a painless ovoid mass was felt attached to the uterus and extending upwards and to the left. The condition was considered to be one of dextro-deviation of the uterus associated with a tubo-ovarian mass of the left adnexa.



Figure Showing Diagram of Uterus bicornis Found at Operation on Dr. Dawson's Patient.

The introduction of a speculum revealed a hypertrophic chronically inflamed cervix with a small posterior erosion; this portion was excised and submitted to the pathologist for examination. He reported that the sections showed an erosion and a subacute inflammatory reaction. There was no evidence of any malignant growth.

With some difficulty a sound was passed into the body of the apparently dextroverted uterus and this was followed by a dilatation and curettage; the endometrial scrapings revealed nothing abnormal. The abdomen was then opened and the condition of *uterus bicornis* was discovered without any other abnormal condition of the pelvic viscera, the tubes and ovaries being all healthy.

The uterus which is represented in the accompanying sketch, possessed two distinct cornua, the cavities of which opened into a common cervical canal. To each cornua was attached a normal tube, ovary and broad ligament. The relationship to the bladder and the utero-vesical pouch of peritoneum did not differ from the normal, except for the bifid condition of its posterior boundary.

The two cornua were approximately equal in size and from their appearance it seemed probable that they had each been the site of gestations. No operative measures seemed indicated and the abdomen was closed without any interference with the pelvic condition.

Reference to the literature indicates that such cases as these are seldom diagnosed prior to operation. This is probably due to the fact that unusual conditions of this kind are not commonly in the surgeon's mind, especially when there is no history of obstetric or menstrual dysfunc-

tion to arouse suspicion. The common diagnosis is the same as that which was tentatively made in this case, that of lateral deviation of the uterine body associated with adnexal inflammation or new growth.

DUODENAL ULCER: UNUSUAL RADIOLOGICAL APPEARANCES.

By H. A. McCoy, M.B., Ch.M. (Sydney), D.M.R.E.
(Cambridge),
Adelaide.

THE diagnosis of ulcer in the first part of the duodenum usually depends on the presence of a deformity in the outline of the duodenal bulb. The incisura which is the cause of this deformity, is spasmodic in character in all cases in which there is no gross scar contraction in the duodenal wall resulting from long standing ulceration. The spasmodic incisura has, in fact, acquired the distinction of recognition as the chief among the cardinal radiological signs of duodenal ulcer. The "fleck," when present, is the sign of a barium-filled crater and though perhaps more positive as evidence, is less consistently observed than the incisura. It is almost certain, in fact, that if in any particular case a "fleck" be observed, an incisura will be present in the wall of the duodenum apposing the "fleck." The reverse is by no means constant, however.

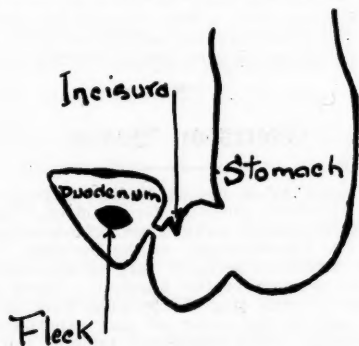
The excuse for the publication of the following case lies in the fact that whilst it was possible to establish a positive diagnosis of duodenal ulcer by the demonstration of a large "fleck," no coexisting incisura was observed.

Clinical History.

Mr. J.E.B., *etatis* twenty-seven years, was referred to me by Dr. de Crespigny who requested a barium meal examination on account of symptoms suggesting peptic ulcer.

On September 19, 1928, under the fluoroscope the following facts were determined: A small spasmodic incisura was constantly present on the lesser curvature of the stomach about 1.25 centimetres (half an inch) proximal to the pylorus. The duodenal bulb appeared larger than usual, was filled completely with ease and its outline preserved the characteristic bluntly conical shape in all planes of rotation. Manual expression of the barium from the duodenal bulb, repeated many times, resulted in the constantly recurring demonstration of a "fleck" situated within the outline of the bulb, about 1.25 centimetres (half an inch) distal to the pylorus and towards the greater curvature border. The "fleck" did not project from the normal outline of the duodenum in any position.

The condition is depicted in the accompanying diagram.



There was, therefore, positive evidence of an ulcer in the duodenum, not associated with an incisura and indirect evidence of a small ulcer (not actually demonstrable) on the stomach side of the pylorus.

On September 26, 1928, under ether anaesthesia, Dr. Cudmore operated and demonstrated clearly an ulcer on the posterior wall of the duodenum towards the greater

curvature border about 1.25 centimetres distal to the pylorus. The lesion appeared to be about nine millimetres (three-eighths of an inch) in diameter and there was a considerable degree of inflammatory reaction on the serous surface overlying the ulcer. A minor degree of thickening of the lesser curvature on the stomach side of the pylorus was considered by Dr. Cudmore to be the site of a small ulcer with no peritoneal reaction overlying it.

Posterior gastro-enterostomy and appendicectomy were performed.

Summary.

The following facts connected with the case quoted are of special interest:

1. The radiological demonstration of a barium-filled ulcer crater without a coexisting incisura.
2. The association of a duodenal ulcer and small gastric ulcer in same patient (the evidence for the gastric ulcer was not positive as the lesion was very small in size).
3. The occurrence of a proven duodenal ulcer in a patient under the age of thirty years.

Acknowledgements.

I wish to thank Dr. de Crespigny for the privilege of recording the radiological findings in his patient and Dr. Cudmore for the demonstration of the lesion at the operation.

Reviews.

HYPNOSIS AND ITS APPLICATION.

THE object of Dr. Bernard Hollander's book on hypnosis and self-hypnosis is to present the experiences met with and the views resulting therefrom in the course of thirty years of practice with this method.¹ That hypnosis is a valuable method of treatment in suitable cases no one doubts and it is natural to expect that a book which is the upshot of thirty years' experience will add something to our knowledge of the subject. But this is scarcely the case with the present work. Dr. Hollander begins with a chapter entitled "Universal Suggestibility" in which many examples of human suggestibility are cited, but little or no light is thrown upon the manner in which they come about. Yet this is a subject upon which a great deal is now known. The same criticism applies to the second chapter, "The Subconscious Mind." The book is in fact written throughout in a popular style and appears intended rather for popular reading than for critical consumption. The most useful part of it is the author's description of the method of hypnosis which he practises, a simple, practical and evidently in the author's hands an effective method of heightening hypnotic suggestibility in the waking state. He stresses also the necessity of reeducation for life, essential, he tells us, if the patient is not to relapse, as well as the necessity of treating any physical disorder (in the ordinary sense) which may be present.

Dr. Hollander is not very well acquainted with recent advances in psychological theory. He is thus at a disadvantage in interpreting his own experience. He tells us that in psycho-analysis a transference of affection takes place to the physician, while in hypnosis no such transference takes place (page 175). But on page 94 we read that a successfully treated patient wrote to him as follows: "You are to me a Solomon of wisdom and a mountain of moral strength." Dr. Hollander regards this as a wonderful tribute to the value of psychotherapy. A psycho-analyst would make a different comment. It would be difficult to find a better example of the effect of unconscious transference as analysts understand it. It is, of course, well known that Professor Freud abandoned hypnosis because the conditions forbid insight and because the results are dependent throughout upon the patient's relation to his physician.

¹ "Methods and Uses of Hypnosis and Self-Hypnosis: A Treatise on the Powers of the Subconscious Mind," by Bernard Hollander, M.D., M.R.C.S., L.R.C.P.; 1928. London: George Allen and Unwin, Limited. Crown 8vo., pp. 191. Price: 6s. net.

A little over a third of the book is taken up with a discussion of experimental phenomena apart from therapeutics. Such phenomena in the author's view include heightened sensibility, exaltation of the intellectual powers, clairvoyance, telepathy, apparitions and premonitions. This is the least interesting part of the book, since it contains little of the author's own experience and much quotation from other writers. We are told in regard to clairvoyance, for instance, that we have to take it on trust, apparently because it was familiar to the mesmerists of the past and vouched for by men of learning and good standing, while some experimenters took "every possible precaution" against self-deception or fraud. It seems reasonable to require a little more than this.

ABDOMINAL SURGERY.

"PRACTICAL SURGERY OF THE ABDOMEN," in two volumes, by George H. Juilly, is an American work intended chiefly for medical men who, not having the experience or facilities of large general hospitals behind them, are called upon to operate in the abdomen—the site of so many catastrophes.¹ By lucid diagrams and by concise notes on diagnosis the author endeavours to help the young surgeon to decide what is the nature of the abdominal condition and how best to treat it. Very seldom is more than one method of operation described. The author himself in his wide experience decides on the best and definitely advises the surgeon. This work would be helpful to any surgeon who desires to refresh his mind before entering upon an abdominal operation. The books are printed on excellent paper in good type and the contents well set out so that it is a pleasure to peruse their pages.

In discussing the closing of abdominal wounds, a novel way is advocated of fixing the ends of silkworm sutures by passing them first through bone washers and then through perforated leaden shot. After the sutures are pulled tight the shots are clamped by a forceps so that the suture will not slip, the shot resting on the washers—rather a complicated way compared with the satisfactory method of tying silkworm sutures over a roll of gauze with a knowledge of the pressure exerted.

Abdominal drainage after suppuration in the abdomen is definitely described and should do much to decide the operator as to whether a drain should be used and, if so, where it should be placed and of what nature the drain should be.

The chapter on herniæ is well presented and all the complications of sac contents, for example, diverticulum of bladder, land slide of large bowel *et cetera* are dealt with and the best method of surgical cure described. Under the heading "Inguinal Hernia" is a clear description of Bassini's operation, though the method of opening the peritoneum and inserting the finger to find a small sac is unnecessary and an additional risk when such sacs can always be made evident by gentle traction on the cord.

The surgery of the stomach and duodenum is introduced by some concise points in diagnosis of the various lesions of this part of the alimentary tract. The author deprecates the performance of partial gastrectomy in chronic gastric and duodenal ulcer, so widely practised today, and makes out a good case for the choice of excision or destruction of the ulcer and drainage of the stomach by gastro-jejunostomy. The description of this operation is one that can be readily followed by even the most inexperienced surgeon, aided as he is by clear diction and good diagrams of the various steps of the operation. In the operation of pylorotomy the author favours Bilioth II operation for reforming the continuity of the stomach and bowel rather than the more generally used and easier operation of Pólya.

In the discussion on the surgery of the intestines mention is made of the serviceability of Murphy's button in anastomosis of the small bowel where speed is essential. Most surgeons who have used this mechanical means of anastomosis advocate the use of a suitable sized button only in the large bowel whence it is readily passed. It is interesting to note that the operation of choice for removal of cancer of the large intestines is a modification of Mikulicz's operation. It is carried out in three stages: First, a caecostomy, then the freeing and eventration of the cancerous bowel and lastly the closing of fistulæ resulting from the removal of the mass. This protracted operation appears to give a much lower mortality rate than the intraperitoneal resection of the bowel in two stages.

The surgery of the biliary tract is dealt with in a thoroughly practical and helpful way for the inexperienced surgeon and the question of secondary repair of the common bile duct is discussed, we trust only for the skilled surgeon. In cancer and irremovable stricture of the bile duct the operation of cholecyst-duodenostomy only is mentioned, the entirely satisfactory and more easily executed cholecyst-gastrostomy being ignored.

The second volume opens with the surgery of the genito-urinary tract, the author rightly considering that an abdominal surgeon, even in these days of specialism, must be able to recognize morbid conditions of these organs and to treat them successfully. He discusses "what to do," "what not to do" and "why." The technical study needed in the diagnosis of urinary pathological change is only slightly dealt with, the principles of the various methods being stated.

The rest of this volume with the exception of a brief study of obstetrics and gynaecology and very useful hints on local anaesthesia, is given up to discussing the "acute abdomen." Here we consider the author is at his best in dealing with the ever difficult task of diagnosis in acute abdominal conditions, which are the class of cases in which the young surgeon hesitates as to what is best for his patient—whether immediate laparotomy or the expectant and watchful care of the patient. The various catastrophes of the abdomen are clearly dealt with and they are considered first in a general way under such headings: "Rigidity of the Abdominal Muscles," "Abdominal Distension" *et cetera*. The author wisely urges the advisability of a colostomy or jejunostomy whenever peritonitis is becoming generalized. In cases of ruptured appendix, where the peritonitis may become diffuse, the caecum is stitched to the abdominal wall with a short, large bore tube, leading down to the surface of the bowel, so that if infection spreads, the caecum can be opened without a general anaesthetic. Exception may be taken to the statement that eserine and pituitrin are not only useless in peritonitis, but harmful; in early peritonitis these drugs are certainly of service and in advanced cases, does anything help?

The work closes with a few remarks on post-operative treatment and a bibliography of references of the latest works on abdominal surgery, almost entirely American.

Notes on Books.

We have been asked by the Medical Superintendent of the Royal Alexandra Hospital for Children, Camperdown, New South Wales, to make some reference to the new edition of the Pharmacopœia of the hospital. This little publication contains a series of very valuable prescriptions used in the practice of the hospital. Those who have worked there, realize that the formulæ have been devised with care and as the result of long experience of competent clinicians. The posological table is full, complete and accurate. In addition there is some useful information in regard to dietary, bio-chemical tables and the like. The edition was printed by the Australasian Medical Publishing Company, Limited, which has been congratulated on its work by the President of the Hospital, Sir Charles Clubbe. Copies of the Pharmacopœia can be obtained from the hospital or from Angus and Robertson, Limited. The price is four shillings.

¹ "Practical Surgery of the Abdomen," by George H. Juilly, M.D.; with a Foreword by W. Wayne Babcock, M.D.; Volumes I and II; 1928. Philadelphia: F. A. Davis Company. Royal 8vo., pp. 1302, with illustrations. Price: \$18.00 net.

The Medical Journal of Australia

SATURDAY, MAY 4, 1929.

Higher Degrees in Surgery.

IN the third number of *The Journal of the College of Surgeons of Australasia* just issued will be found an official record of the proceedings of the second annual meeting of the college held in Sydney on March 6, 1929. There is much of interest to the medical profession as a whole in these records and it is hoped that its members will manifest sufficient concern in their own affairs to ascertain at first hand the opinions of the fellows of the college. Medical practitioners frequently complain that the organizations to which they belong, are of little or no use to them and that these bodies do nothing to safeguard their interests. The truth is that the majority rarely informs itself of what is being done and does not take the trouble to indicate what its views are in regard to those aspects of medical practice in which it is engaged.

The late George Adlington Syme, whose sudden death has shaken the medical profession throughout the Commonwealth, presented a statement on the subject of senior surgical qualifications and put forward two motions for discussion. The debate was the direct result of a previous resolution of the College of Surgeons of Australasia to the effect that action should be taken to introduce uniformity of the higher degrees in surgery granted at the Australasian universities. A similar suggestion was made at the last session of the Australasian Medical Congress, held in Brisbane in 1920. The proposals put forward by George Adlington Syme were that the examinations for these degrees should be conducted by a conjoint board representing all the faculties of medicine in the universities of Australasia and that these examinations should comprise in part I, physiology, including biological chemistry, and surgical and applied anatomy and in part II, surgical pathology and general or special

surgery. He also proposed that undergraduates who had secured first or second class honours in the examination for the degree of bachelor of medicine at one of the Australasian universities, should be allowed to sit in Australia or New Zealand for the primary examination of the fellowship of the Royal College of Surgeons of England.

There appears to be considerable difference of opinion concerning the meaning of the terms senior surgical qualifications and higher degrees in surgery. For the purpose of the College of Surgeons of Australasia it is clear that on and after February 5, 1932, all practitioners applying for the fellowship will have to possess the fellowship of the Royal College of Surgeons or the degree in surgery equivalent to the degree of doctor of medicine. But since this will be a condition of admission in five years after the establishment of the college, it was wise for the fellows to consider the value of these so-called senior qualifications. Dr. C. E. Corlette uttered a timely warning in these columns in November, 1927. He returned to the charge at the annual meeting of the college. Dr. F. P. Sandes endeavoured to secure for the University of Sydney a material heightening of the standard and a recognition of the real importance of originality of work. The remainder of the speakers focused the attention of the meeting to the practical application of the motion and to the effect it would have on those practising surgery. Dr. B. Zwar obtained the support of those present in eliding from the motion the reference to first or second class honours as a condition essential for those who desired to sit for the primary examination for the fellowship of the Royal College of Surgeons. With this amendment the motion was adopted.

The passing of an examination is no indication either of knowledge or of intellectual ability. Apart from the deplorable fact that many candidates are coached by persons acquainted with the vagaries of examiners and the limited scope of examinations, it must be admitted that much that is accepted today as a correct answer to a question, will be proved tomorrow to be false. Dr. Corlette is justified in referring to the facile memory and to the stuffing of the mind with a multitude of important and unimportant facts and a multitude of opinions

taught by the sausage-machine teachers. Again some highly intellectual men have been found to be bad examinees; they are ill at ease when required to give stereotype replies to standard questions. It is claimed that unsatisfactory as the examination is as a test of knowledge and ability, there is no better method. The universities are prepared to accept a thesis on original work as evidence of knowledge and intellectual ability. If the theses were always based on original observation and experimental research and if the examiners entrusted with the task of judging the theses were themselves original investigators, the alternative would be acceptable. Often, however, the candidate collects the literature on a particular subject and collates the facts and opinions contained in the work of others. There is nothing difficult in this work. The candidate, it is true, must read carefully and he must understand what he reads. In many instances his reading is uncritical and he does not contribute a single idea or hypothesis to the subject on which he spends so much time. The examiners are satisfied if the presentation is relatively orthodox.

The outcome of the debate is not encouraging. The future of surgeons and of surgery in Australasia appears to us to be endangered if the criterion of a surgeon is to be based on his deftness with a scalpel, the opportunities he has encountered and the letters he can append to his name. It would be more reassuring if the universities insisted on evidence supplied by competent judges of original work either in the clinic or in the field or in the laboratory. It has been stated that not every one has the research gift, but this argument is scarcely valid. Every aspirant for special recognition as a learned surgeon must provide indications of his intellectual ability to think for himself and to observe accurately. Is not this the soul of research?

Current Comment.

TISSUE ACIDOSIS.

WHEN the amount of water ingested together with the water produced by metabolic processes of the body does not equal in amount the water eliminated

from the body, there occurs a certain degree of desiccation of the body tissues and fluids. The available store of water in the body is large and the storage is effected mostly in the muscles and skin and blood. When desiccation of the body occurs, a considerable degree of acidosis results. Characteristic evidence of the acidosis may be found in the blood. There is also a lowered carbon oxide tension in the alveolar air and an increased alkali tolerance may be noted. It has been shown that the acidosis is not due to an excessive production of acetone bodies. It is partly the result of acids produced by the diminished volume of the circulating blood. Wright and Colebrook and Gesell have shown that a diminished volume of circulating blood leads to an overproduction of acids in the tissues, presumably as the result of suboxidation—of anoxæmia. Peyton Rous and D. R. Drury reported in 1925 the occurrence of states in which acidosis of the tissues occurred without any change in the reaction of the blood. They have recently published a further paper dealing with what they designate as this "outlying acidosis."¹ They point out that when the circulation is seriously impaired, acid substances formed in the tissues and the acid products of ordinary cell activity will tend to be retained. Experiments upon animals vitally stained with indicators have shown that the accumulation in these circumstances is often sufficient to produce a susceptible tissue reaction. The local manifestations of acidosis following on direct interference with the circulation were demonstrated by them in the following manner. They used white rats which had been shaved and stained by the intraperitoneal injection of phenol red or brom-cresol purple. It was found that when the circulation to an extremity was interrupted, the reaction of the subcutaneous tissue underwent an alteration towards acidity in a few minutes, the alteration being sufficient to change the colour not merely of the phenol red, but also of the cresol purple from a purple-blue to blue-green. Similarly when epinephrin was injected, the temporary ischæmia led within a few minutes to acidosis in the region affected.

Under the heading of paradoxical acidosis Rous and Drury describe an observation in which a shaved white rat, stained with phenol red, was given several cubic centimetres of a strong solution of sodium carbonate by the stomach tube. Soon afterwards the blood reaction became more alkaline and alkaline urine was voided; at the same time the shaved body, instead of participating in the alkalinity, turned orange yellow, in other words became relatively acid. In experiments of this nature there was always a change in the cell-plasma relationship of the blood, the proportion of cells increasing at the expense of the plasma to a considerable, sometimes to an enormous extent. This change was regarded as an expression of an anhydræmia because not only was the normal sodium carbonate solution strongly hypertonic, but the amount of fluid extruded from the body into

¹ *The Journal of Experimental Medicine*, March 1, 1929.

the bowel was such as to distend it to a considerable extent. Further, the same type of result was obtained with normal magnesium sulphate solution and also with hypertonic dextrose solution. It was also found that when anhydræmia was averted, acidosis was avoided. This was accomplished by injecting into the peritoneal cavity a quantity of warm distilled water. Rous and Drury point out that according to clinical experience it is often difficult to check the course of anhydræmia. Their efforts with animals which were given carbonate of soda, were successful only with critical doses of the latter. When more than the critical dose was given, the desiccation and acidosis which developed rapidly, were uninfluenced by water; when less was given, none of the animals became sufficiently anhydræmic or acidotic for the purposes of the work. With the critical doses the fluid was rapidly removed from the peritoneal cavity of the injected rats, there was slight change at most in the cell-plasma relationship, the blood became more alkaline than normal and alkaline purgation and diuresis took place with rapid decolorization and recovery. When dextrose was used instead of carbonate of soda, the results were similar, except that the blood of the animals receiving the water did not become more alkaline than normal. Rous and Drury believe that better results would have been obtained with salt solution, but use of the latter would have introduced a fresh difficulty in the interpretation of the experiment. Outlying acidosis was found to occur after hæmorrhage and experiments are recorded of a frank acidosis unaccompanied by change in the blood reaction. In extreme cases in which the hydrogen ion concentration fell, the fall in hydrogen ion concentration occurring in the tissues was several times more considerable. It was concluded that patchy outlying acidosis was due to patchy ischæmia and it was found that the acidotic patchiness developed while the general blood pressure was still well maintained.

The concentration of hydrogen ions of blood plasma depends on the relative concentration of dissolved carbonic acid and of bicarbonate. The tissues are the source of the carbonic acid. It follows that if the blood supply to the tissues is temporarily cut off or much diminished, there will be an accumulation of carbonic acid in the plasma-starved tissues. All the experimental results of Rous and Drury can be explained and have been explained by them in terms of reduced circulation. Even in the animals which were given carbonate of soda by mouth, the effect was the production of an anhydræmia and so of diminished blood supply to the tissues. When the blood supply to the tissues is diminished, the products of cellular activity will not be removed, more carbonic acid will be produced and acidosis will result. Since the circulation to the affected part is not normal, the increased carbonic acid will not be carried into the circulation and the hydrogen ion concentration of the blood plasma will not alter. It would be expected from this that when the circulation was restored, there

would be a flooding of the blood with acid products and an alteration in hydrogen ion concentration. Rous and Drury do not make any observation on this point, but they state that Hertzmann and Gesell noted a rise in the hydrogen ion concentration of the blood when its volume was suddenly restored after a hæmorrhage. A subjective clinical example of this may possibly be that of a person who has taken ephedrin. Most patients after taking this drug complain of a feeling of cold from the constriction of the vessels of the skin. According to the work of Rous and Drury an acidosis of the skin will occur. As a rule the return to normal is gradual and no definite symptoms are noted. Sometimes, however, a complaint is made that the patient feels tired as though he had taken unusual exercise; this may be due to the taking up of acid products from the skin with an alteration in hydrogen ion concentration. There are many other clinical conditions in which the observations of Rous and Drury might apply. Anhydræmia from any cause will be first on the list. This may be due to severe vomiting, as in infants with hypertrophic pyloric stenosis, to vomiting in high intestinal obstruction, to severe diarrhœa, to loss of fluid by sweating as in persons working in deep mines or in the stokeholes of ships, to voluntary refusal of water occasionally seen in the insane. The terminal or agonal dehydration must not be forgotten. As already stated these observations might apply to persons who have suffered from severe hæmorrhage and also when the circulation has been interrupted through the agency of the sympathetic nervous system, as in Raynaud's disease. While this work is of interest, it must be remembered that all grades of acidosis may occur in the tissues, the non-alteration of the hydrogen ion concentration of the blood will occur only when the tissue concerned is practically cut off from the main circulation. At the same time it must be remembered that the alteration of hydrogen ion concentration of the blood is of rare occurrence; the level is maintained in a surprising manner, in spite of tissue variations.

THE FLYING DOCTOR.

IN our issue of February 16, 1929, we appealed to young, stout-hearted, experienced practitioners to devote a year to the interests of Australians living beyond the reach of established medical aid. Since then the difficulties, dangers and resource of the aviation service have been brought forcibly to the notice of the whole community and the admirable organization of the Queensland and Northern Territory Aerial Service has awakened the admiration of all. The response to the efforts of the Australian Inland Mission and of this journal has been the application and acceptance of Dr. J. Atcheson Spalding as the Flying Doctor in succession to Dr. K. St. Vincent Welch. He will take up his duties at Cloncurry on or about May 18, 1929. We wish him every success in his adventurous undertaking.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

Radium Therapy in Vernal Catarrh.

F. C. CORDIS AND W. D. HORNER (*American Journal of Ophthalmology*, August, 1928) believe that radium should have a wider use in the treatment of vernal catarrh than it has received. They report the technique and results in six patients. All the patients were boys between ten and thirteen years of age. Five had the palpebral type and one the bulbar type of vernal catarrh. In the first ten milligrammes of radium element were used, screened with 0.5 millimetre of silver, and applied over the closed lids at a distance of 1.2 centimetres twice a week for two months, then every two weeks for two months. There has been no recurrence. The second patient benefited, but should have had larger doses. For the third patient a capillary tube 1.2 centimetres long, containing 100 millicuries of radium, was applied unscreened for five seconds directly to the everted eyelids. For the next patient the radium plaque screened with rubber was applied to the everted lids for ten seconds once a week for a month. Later it was applied for forty-five seconds with good result. The fifth patient had vernal catarrh of the bulbar type; the plaque screened with rubber was applied directly to the lesion for thirty seconds, repeated once a month for four months; the result was good. In the sixth patient a plaque of ten milligrammes screened with rubber was applied to the everted lids for thirty seconds once a week for a month. Then a 1.5 centimetres capillary tube of sixty-eight millicuries of radium was applied unscreened to the everted lids for ten seconds. The plaque just short of contact was moved slowly over the area. Unscreened radium gives the best results and the capillary tubes are most convenient. An erythema dose is to be avoided.

Ptosis Operation.

H. W. SCARLETT (*American Journal of Ophthalmology*, October, 1928) states that Shoemaker in 1907 disputed the view that in the Motais operation there was a physiological substitution of the middle third of the superior rectus tendon for the levator muscle. He claimed that the lid was held in its new position simply by anchorage. It seems to be quite unnecessary to disturb the superior rectus or to remove any part of it from the eyeball. A girl of twelve was operated upon in this way with good result. The upper lid was everted and the superior rectus tendon isolated, but not severed from its attachment. A double-armed suture was next inserted in the middle third of the exposed tendon, from within outwards, the loop next to the eyeball. An incision was then made parallel to the upper border of the

tarsus and extending the entire length of the lid through skin, muscle and conjunctiva. The upper border of the tarsus was freed of orbicularis muscle. This opened a hole in the lid, through which the ends of the tendon suture were then drawn, and a bite was taken in the middle third of the upper portion of the tarsus, proceeding through the orbicularis muscle and coming out on the skin surface, where the ends were tied over rubber tubing.

Ptosis and the Cervical Sympathetic.

R. LERICHE AND R. FONTAINE (*La Presse Médicale*, Août 18, 1928) publish some clinical observations on the effect of surgical interference with the cervical sympathetic and ptosis of the upper eyelid. Sympathectomy performed around the internal carotid and also around the subclavian artery will cause ptosis and exophthalmos. In a female patient extirpation of the superior cervical sympathetic (for painful injury of the upper limb) was followed by a complete ptosis. A second intervention discovered a small neuroma at the upper end of the cervical sympathetic. Its removal was immediately followed by the disappearance of the ptosis. After several months it recurred, but to less extent. For the recurrence of pain in the limb a deep injection of "Novocain" was made into the sympathetic region. This was immediately followed by the disappearance of the ptosis. It would seem that ptosis is due to stimuli arising from the scarring of the cut nerves, an active phenomenon and not the result of paralysis of Müller's fibres. Anaesthesia destroys temporarily these stimuli and the ptosis disappears.

Tension in Glaucoma.

S. R. GIFFORD (*American Journal of Ophthalmology*, August, 1928), while admitting the value of adrenalin or "Glaucosan" in the treatment of simple glaucoma, draws attention to the fact that an acute rise in tension may follow its use and reports two cases. He has given up the practice of injecting "Glaucosan" and applies a pledget of cotton wool soaked in adrenalin to the upper fornix for three minutes. He takes the precaution of instilling eserine both before and after the adrenalin. Many other authors report rise in tension after adrenalin. He concludes that it is valuable as an adjuvant to other remedies in chronic simple glaucoma, but dangerous in inflamed eyes or in eyes with damaged vessels. It should not be used in acute glaucoma, in inflammatory and hemorrhagic glaucoma, in absolute glaucoma or in glaucomatous iritis. Mydriasis should be prevented or minimized by the free use of miotics before and after adrenalin treatment.

"Glaucosan" in Glaucoma.

D. K. PISCHEL (*American Journal of Ophthalmology*, September, 1928) recalls the introduction of adrenalin in ophthalmology by Hamburger in 1922. "Glaucosan" is a combination of a dextrorotatory suprarenin and a

neutral substance. This can be used without fear of systemic reaction as eye drops or better still for subconjunctival injection. In the search for a more powerful drug for instillation, return had to be made to the levorotatory substances and "Linkoglaucosan" was made. It should never be injected. A third drug was discussed, called "Aminglaucosan," which unlike the other two, is a powerful miotic. It is only useful in an emergency, for instance for acute glaucoma. In glaucoma simplex the most suitable is "Linkoglaucosan." "Holocain" is first instilled followed by one or two drops of "Levoglaucosan," repeated every fifteen minutes up to five instillations. The eye becomes very white and the pupil widely dilated. The tension comes down in some minutes or hours, sometimes in a most dramatic fashion. It stays down for a variable time from two to ten days. In some patients after "Linkoglaucosan" eserine regained its power to keep the tension down. As there seems to be some possibility of its causing a rise of tension, the patient should be under observation.

Intra-capsular Extraction of Cataract.

E. E. MADDEN (*British Journal of Ophthalmology*, August, 1928) has devised a special forceps for gripping the extreme cut edge of the conjunctiva in the centre of the upper wound during the intracapsular extraction of cataract. The instrument has teeth like capsule forceps and is so curved as to allow easy exit of the lens. It counteracts the tendency of the eye to roll upwards. It depresses the upper lid of the wound which is thereby tucked under the emerging lens. Traction downwards has the effect of closing the wound as opposed to traction below the cornea which makes the wound gape.

Shallow Anterior Chamber.

W. F. SWETT (*American Journal of Ophthalmology*, September, 1928) has devised a means for the better performance of a corneal incision in cases of shallow anterior chamber. This obviates the unsatisfactory use of scissors in enlarging a wound. The point of a Graefe knife is inserted one millimetre outside the limbus and enters the angle of the anterior chamber for a distance of four millimetres; a counter-puncture is then made and the knife is brought to the surface. A fairly wide spatula or repositr is then introduced into the wound, directed first upwards and then swept downwards over the surface of the iris. The knife can then be reinserted and complete the corneal section without wounding the iris.

Bacterial Antigen in Uveitis.

R. E. MASON (*American Journal of Ophthalmology*, September, 1928) endeavoured to find some biological product that would give the good results of a foreign protein without severe shock following its injection. This he found in an antigen containing *Streptococcus hemolyticus* with

Staphylococcus aureus and *albus*; it has a very low protein content and is non-toxic. It was given by intramuscular injection beginning with one cubic centimetre and increasing 0.5 cubic centimetre every twenty-four or forty-eight hours, the maximum being two cubic centimetres. He used a preparation under the trade name of "Streptococcus Immunogen Combined." The writer regards this antigen as specific in iritis and iridocyclitis and records the results of its use in eight patients.

OTOLOGY AND LARYNGOLOGY.

Removal of Metallic Foreign Bodies from the Bronchi.

D. CAMPBELL SMYTH (*New England Journal of Medicine*, June 14, 1928) urges the cooperation of the radiologist and laryngologist in the removal of metallic foreign bodies from the bronchi. His opinion is that fluoroscopy should be available at all attempts at removal of foreign bodies and should be used if one attempt by direct vision is unsuccessful. Usually it is employed as a last resource when many attempts with bronchoscopy have failed. He claims that the higher mortality by fluoroscopic removal is due to this fact alone. This method is especially desirable for foreign bodies lying deep in the terminal bronchus where direct vision is impossible. In the Massachusetts Eye and Ear Infirmary fluoroscopic removal has been successful in eight patients in the last two years. In six of these patients unsuccessful attempts at removal by bronchoscopy had been made previously. In another the foreign body, a scarf pin, had lain in a posterior terminal bronchus for thirty-one years prior to removal. The foreign bodies removed were a safety pin, a shawl pin, an amalgam filling, a tooth, tacks, a scarf pin and a bridge of teeth. A local anæsthetic is used with morphine; general anæsthesia is reserved for any difficult manipulations. A drawback to general anæsthesia is the difficulty of grasping foreign bodies situated near the lung bases owing to diaphragmatic movements. This can be overcome by exerting temporary pressure on the diaphragm on the affected side.

Unilateral Deafness and Malingering.

JOHN GUTTMAN (*The Laryngoscope*, October, 1928) details a new method of determining unilateral deafness and malingering. He is of opinion that noise apparatus and blockage of the normal ear are ineffectual; he uses an audiometer for his test. During the perception of one sensation, a second sensation can be perceived contemporaneously only when the second sensation differs within certain limits from the first sensation quantitatively, qualitatively or in both respects. The minimum difference needed for the contemporaneous perception of two sensations is called differential threshold. When two tones of identical frequency

and sufficiently great differences of intensity are introduced simultaneously one in each ear, only the tone of the greater intensity will be heard and will be lateralized in that ear. Applying these facts the normal ear is connected to the audiometer and its threshold established. Then through a second receiver a tone of the same frequency is transmitted to the deaf ear and its intensity increased until the tone in the normal ear is suppressed and the lateralization of the tone in that ear abolished. This determines the threshold in the deafened ear. The detection of malingering rests upon the same reasoning.

Simulation of Unilateral Deafness.

B. M. BECKER (*The Laryngoscope*, October, 1928) describes a simple method for detecting a simulated unilateral deafness. To the shallow cup of a Bowles's stethoscope a piece of rubber tubing thirty centimetres in length is attached. The bifurcated fitting is attached to the other end of this tube. To the other end two pieces of rubber tubing, one thirty and the other sixty centimetres in length, are attached. The free ends of the latter tube are fitted with accurately fitting ear pieces. A watch of suitable ticking intensity is held against the stethoscope for the test. The test can be by direct or indirect method. In the indirect method the short tube is placed in the normal ear and the long tube in the supposedly deaf ear. Hearing is admitted in the good ear. If the longer tube is now compressed the hearing of the normal ear is increased, if hearing is present in the supposedly deaf ear. In the direct method the shorter tube is inserted in the supposedly deaf ear and compression of the longer tube will cut out all sounds reaching the normal ear, so that any admission of hearing means that the alleged deafness is non-existent.

Infection Following Laryngectomy.

LIONEL COLLEGE (*Journal of Laryngology and Otolaryngology*, September, 1928) records the incidence of infection in the clavicle, sternum and the first rib of a patient who had undergone laryngectomy. The lesion of the larynx was an epithelioma of the left cord extending in the subglottic area to the right side of the larynx. The author had some misgivings at operation owing to the fact that the neck had been exposed to X rays on twelve occasions previously without benefit. The operation presented no unusual features and no chest involvement occurred. On the fourth day after operation the temperature and pulse rate increased and during the following week much sloughing of the soft tissues and tracheal cartilages occurred. A week later the patient complained of a pain at the root and right side of the neck and the right shoulder and tenderness was noted over the right sterno-clavicular joint. The temperature was of a swinging type and the condition grave. Exploration of the neck failed to reveal anything

abnormal, but later on exploration of the sterno-clavicular joint pus was found in profusion. The medial half of the clavicle was excised; the bone was carious. Normal conditions recurred and remained so for eight days, when temperature and pulse rate again were elevated. A month later a sequestrum was removed from the first rib. After the third week the wound was again opened and the anterior half of the first rib excised. Ten days later temperature and pulse were normal and remained so. A small sinus in the clavicle area persisted till a sequestrum was removed two months afterwards. There was no disability of the right arm, but a tracheal tube had to be worn.

Sinusitis and Mental Disorders.

T. C. GRAVES and F. A. PICKWORTH (*Journal of Laryngology and Otolaryngology*, August, 1928) contribute their findings in the routine examination of the ear, nose and throat of patients with mental disorders. This work has been carried on for the past four years at the Birmingham mental hospitals. Sinusitis was found on admission and at autopsy associated with many types of mental disorders. In many patients successful treatment of the sinusitis resulted in a great improvement of the mental condition and in some complete recovery. The history of five of those who died is cited in detail. They were patients certified for the first time and their ages were from nineteen to thirty-seven years. In 1927 50% of patients admitted were suffering from sinusitis; in half this number diagnostic examination of the nose by the Watson Williams technique was possible; 75% of patients admitted suffered from oral sepsis. Of the causal factors common to nasal disease and mental disorders, association of hereditary nasal disease and insanity is not traceable. When psychotic heredity is associated with hereditary nasal disease, the prognosis is bad. Influenza is a recognized immediate or remote cause of acquired disease. The signs and symptoms of sinusitis encountered in mental disorders are: General toxæmia, local effects such as conjunctivitis and herpes and delusions founded on the basis of local nerve irritation either of common sensation or the special senses. Effects of treatment are immediate within one month, retarded when slow physical and mental improvement is noted over a period of six months or delayed when improvement only commences after six months have elapsed. Success has been obtained both after brief and after prolonged periods. Pickworth discusses the pathology and ætiology of mental disorders and refers to case reports to show how sinusitis can directly affect the function of the hypothalamus which has been shown by recent research to be a location of the nerve centres controlling the higher metabolic activity. The authors feel hopeful that much can be done for patients with mental disease by careful removal of focal sepsis.

British Medical Association News.

MEDICO-POLITICAL.

A MEETING OF THE FEDERAL COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION IN AUSTRALIA was held on April 10 and 11, 1929, at the Medical Society Hall, East Melbourne, SIR GEORGE SYME, the Chairman, in the chair.

Representatives.

The following representatives of the Branches were present:

New South Wales Branch: Dr. R. H. Todd, Dr. J. Adam Dick, C.M.G.

Victorian Branch: Sir George Syme, Dr. F. L. Davies.

Queensland Branch: Dr. E. Gifford Croll, Dr. E. S. Meyers.

South Australian Branch: Sir Henry Newland, D.S.O., Dr. Bronte Smeaton.

Tasmanian Branch: Dr. Gregory Sprott, Dr. A. W. Shugg.

Apologies for non-attendance were received from Dr. F. A. Hadley and Dr. D. D. Paton, representing the Western Australian Branch.

Sir Henry Newland was appointed proxy for Dr. F. A. Hadley and Dr. R. H. Todd was appointed proxy for Dr. D. D. Paton.

Financial Statements.

The financial statement and balance sheet of the Federal Committee to December 31, 1928, and the financial statement of the Australasian Medical Congress (British Medical Association) Accumulated Funds Account were presented, received and adopted.

Office-Bearers.

The following were elected office-bearers for the ensuing year:

FEDERAL COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION IN AUSTRALIA.

Statement of Receipts and Payments for Six Months ended December 31, 1928.

Receipts.				Payments.			
	£	s.	d.		£	s.	d.
To Balance at June 30, 1928—				By Travelling Expenses		54	7 5
Government Savings Bank				" Sundry Expenses			87 13 4
of New South Wales ..	568	3	8	" Balance at December 31, 1928—			
Union Bank of Australia,				Government Savings Bank			
Limited	190	10	6	of New South Wales ..	564	8	8
Cash on hand	2	14	0	Union Bank of Australia,			
				Limited	51	19	1
				Cash on hand	4	0	8
" Sale of 50 Forms of Model						620	8 5
Agreement		1	1 0			£762	9 2
			£762 9 2				

AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

Accumulated Funds Account.

Receipts.		Payments.	
	£ s. d.		£ s. d.
To Balance at June 30, 1928—Government		By Sundry Expenses—Clerical Assistance ..	7 10 0
Savings Bank of New South Wales ..	377 9 9	" Balance at December 31, 1928—Government	
		Savings Bank of New South Wales ..	369 19 9
			£377 9 9
	£377 9 9		

(Signed) ROBERT H. TODD,

Honorary Secretary.

Sydney April 6, 1929.

Audited and found correct.

(Signed) W. H. CRAGO,

Honorary Auditor.

Chairman: Sir George Syme.

Vice-Chairman: Sir Henry Newland.

Honorary Secretary and Treasurer: Dr. R. H. Todd.

Honorary Auditor: Dr. W. H. Crago.

Medical Association of South Africa (British Medical Association).

A letter was read from the Secretary of the Medical Association of South Africa (British Medical Association) inviting members of the Branches of the British Medical Association in Australia to attend and take part in the second annual meeting of this association at Port Elizabeth on May 13 to 18, 1929. A programme of the meeting was enclosed. It was resolved to bring the meeting to the notice of members by arranging for the publication of the letter and other information in THE MEDICAL JOURNAL OF AUSTRALIA.

British Medical Association.

Membership of Branches.

The Honorary Secretary reported that a communication had been received from Dr. Alfred Cox, the Medical Secretary of the British Medical Association, referring to a paragraph in THE MEDICAL JOURNAL OF AUSTRALIA of August 25, 1928, page 250, dealing with the proposed amendment of Article 17 of the Articles of Association to enable a council of an overseas branch to exercise its discretion in accepting a member of the Association as a member of that branch when he moved from the area of another branch. Dr. Cox pointed out that the Council of the Association was always prepared to give effect to any proposal of the overseas branches provided that the suggested alterations were not in conflict with the constitution. He stated that if the Federal Committee attached great importance to this amendment, it was possible that a way out might be found. The Honorary Secretary pointed out that while the report in THE MEDICAL JOURNAL OF AUSTRALIA was an authorized report and was in accordance with the minutes, the decision of the Council might have been expressed in a less abrupt manner. It was

resolved that no further action be taken in regard to the proposed amendment of Article 17, but that an explanation be given to Dr. Cox.

Model Rules for Ethical Procedure.

The Honorary Secretary reported that the model rules governing procedure in ethical matters for adoption by Branches of the Association in Australia, having been adopted by the Committee, had been printed and submitted to the several Branches and to the British Medical Association in London. The model rules had been carefully considered by the Central Ethical Committee. The Central Ethical Committee had made comments and suggested emendations. Each rule concerning which the Central Ethical Committee had made comments, was considered and a number of alterations was made in accordance with the suggestions of the Central Ethical Committee. The rules are as follows.

REVISED MODEL RULES GOVERNING PROCEDURE IN ETHICAL MATTERS OF A BRANCH IN AUSTRALIA.

RULE 1.

For the better attainment, within the area of the Queensland Branch, of the objects of the Association in regard to the maintenance of the honour and interests of the medical profession, it shall be deemed to be part of the business of the Branch to consider questions of professional conduct, and to pass, in accordance with its Rules, Resolutions upon such questions, which shall be binding upon the Members of the Branch.

RULE 2.

Every question of professional conduct referred to the Branch shall be deemed to be referred to the Branch Council, and the decision of the Branch Council upon such questions shall be deemed to be the decision of the Branch.

No question of the conduct of an individual member of the profession shall in any circumstances be considered by a General Meeting of the Branch.

Procedure in Passing Resolutions as to Professional Conduct.

RULE 3.

Ethical proceedings in respect of the contravention of a Resolution of the Branch shall only be instituted if such Resolution has been passed by the Branch in accordance with the following procedure:—

(i) Twenty-one days' notice of the terms of the proposed Resolution shall be given to every Member of the Branch prior to the Meeting of the Branch at which such Resolution is to be considered.

(ii) At the Meeting the Resolution shall be deemed to be carried if approved without amendment by a three-fourths majority of those present and voting.

(iii) Notice of the adoption of such a resolution by the Branch shall forthwith be sent to every Member of the Branch.

(iv) If less than one-third of the Members of the Branch are present when the Resolution is put to the vote and if within seven days from the circulation of a notice of the adoption of such a Resolution by a Meeting of the Branch as above provided, not less than five per cent. of the Members of the Branch shall request, by notice in writing to the Honorary Secretary of the Branch, that a poll of Members of the Branch be taken by post, a poll shall be so taken forthwith and in such cases the Resolution shall be deemed to be carried if approved by two-thirds of those voting at such poll and not otherwise.

RULE 4.

(a) It shall be the duty of the Honorary Secretary of the Branch to notify every Member of the Branch of every Resolution as to professional conduct duly adopted by the Branch in accordance with these Rules; and it shall rest in the discretion of the Branch Council, to cause any such Resolution or Resolutions to be brought to the notice of any member of the profession residing within the area of the Branch who is not a Member of the Association.

(b) It shall be the duty of the Honorary Secretary of the Branch to notify every Member of the Association coming to reside within the area of the Branch, and every newly elected Member of the Branch, of every Resolution as to professional conduct duly adopted by the Branch in accordance with these Rules, and further it shall rest in the discretion of the Branch Council, to cause any such Resolution or Resolutions to be brought to the notice of any member of the profession who comes to reside within the area of the Branch who is not a Member of the Association.

RULE 5.

The Branch Council may:—

(i) cause to be brought to the notice of any other Branch of the Association, a Resolution of the Branch as to professional conduct, and may request support from such Branch with a view to making the operation of such Resolution more effective;

(ii) cause to be brought to the notice of every Member of the Branch and, if thought fit, to the notice of any or every member of the profession residing within the area of the Branch, any Resolution as to professional conduct adopted by any other Branch, of which the Branch shall have received notice as aforesaid.

This Rule shall only apply to Resolutions in accordance with the provisions of Rule 3 hereof.

RULE 6.

If a Resolution of the Branch shall have reference to the terms or conditions upon which practitioners should accept or hold Appointments of any kind, it shall be the duty of the Honorary Secretary of the Branch:—

(a) When notifying Members of the Branch of the adoption of such Resolution, in pursuance of these Rules, to request those Members who then hold Appointments of the kind in question, upon terms or under conditions inconsistent with the Resolution, to take the necessary steps within a period of one calendar month to terminate such Appointments in accordance with the terms of their engagement, or to secure such modifications of the terms or conditions of such Appointments as shall be necessary for compliance with the Resolution, and no further action shall be taken upon the Resolution under these Rules with respect to such Member until after the expiration of a period of one calendar month from the time when such request was made.

(b) When bringing such Resolution to the notice of any member of the profession residing within the area of the Branch who is not a Member of the Association, in pursuance of these Rules, to suggest to those practitioners who then hold Appointments of the kind in question, upon terms or under conditions inconsistent with the Resolution, the propriety of taking the necessary steps within a period of one calendar month to terminate such Appointments in accordance with the terms of their engagement, or of securing such modifications of the terms or conditions of such Appointments as shall be necessary for compliance with the Resolution.

If any practitioner shall within such period satisfy the Honorary Secretary of the Branch that he has given notice to terminate such Appointment or taken steps to secure modifications, as aforesaid, of the terms and conditions thereof, no further action shall be taken under these Rules with respect to such practitioner until such time as the Council shall determine.

Procedure of Enquiry into Complaints regarding Professional Conduct.

RULE 7.

Complaints regarding the professional conduct of individual members of the profession residing within the area of the Branch shall be addressed to the Honorary Secretary of the Branch.

RULE 8.

It shall be the duty of the Honorary Secretary of the Branch on receipt of a complaint regarding professional conduct of a member of the profession, to take action in accordance with these Rules.

RULE 9.

In a case submitted by a member of the Association, who considers that he has been (or is) directly affected by what

he alleges to be the unprofessional conduct of another member, it shall be the duty of the Honorary Secretary of the Branch to ascertain forthwith whether the applicant has afforded the member against whom he makes complaint a reasonable opportunity of explanation, and if this has not been done, to call upon him to do so. If the applicant fails to take this step within a week, the propriety of his action in making the complaint may itself be made a matter for consideration.

RULE 10.

For the purpose, *inter alia*, of investigating complaints regarding professional conduct, a Committee, called the Ethics Committee, shall be appointed by the Council at the first meeting of the Council after the Annual General Meeting of the Branch. The Ethics Committee shall consist of the President and Honorary Secretary for the time being, *ex officio*, together with not less than five nor more than seven other members of the Council. The Ethics Committee of each year shall remain in office until the succeeding Committee is appointed, provided that the membership of any Member thereof who has ceased to be a Member of the Council shall be deemed to have terminated. Any casual vacancies occurring among the Members of the Committee may be filled up by the Committee. The quorum of the Ethics Committee shall be fixed by the Council at a number not less than four. The Committee at its first Meeting in each year shall appoint a Chairman and Honorary Secretary from among its Members. The Honorary Secretary so appointed:—

- (a) shall receive from the Honorary Secretary of the Branch all matters sent on by him for consideration by the Committee.
- (b) shall consult with the Honorary Secretary of the Branch in the preparation of the business paper for each meeting of the Committee;
- (c) shall attend all meetings of the Committee;
- (d) shall present the business of the meeting to the members present;
- (e) shall keep minutes of the proceedings of each meeting in a minute book, which shall be kept at the office of the Branch in the care of the Honorary Secretary of the Branch;
- (f) shall be responsible for the safe and confidential keeping of all letters, papers, documents, books and such like used in connection with the business of the Committee, and for their safe return to the Honorary Secretary of the Branch.
- (g) shall prepare, in co-operation with the Honorary Secretary of the Branch, reports of the work done by the Committee for presentation to the Council at the meetings thereof;
- (h) shall attend generally to the affairs of the Committee in co-operation with the Honorary Secretary of the Branch.

RULE 11.

Meetings of the Committee shall be held at such times as the Committee shall determine and a meeting may be convened at any time by seven days' notice in writing given by the Chairman or Honorary Secretary of the Committee or the Honorary Secretary of the Branch.

RULE 12.

If any Member of the Ethics Committee be personally concerned in a case as Complainant or otherwise, or be a partner or assistant or principal of any person so concerned or have otherwise such personal interest in the case as, in the opinion of the Committee, to render it undesirable that he should take part in any investigation of the case, he shall, from time to time as the occasion arises, retire from the Meeting during such investigation; or, if the Committee at any time so decides, he shall retire from the Committee until the investigation is completed and, in such case, the Committee may appoint some other Member of the Council who has no personal interest in the case to act in his stead. If the Member of the Committee affected by this Rule be the Chairman or the Honorary Secretary, the Committee shall appoint from among the Members of the Council or the Committee a Chairman or Honorary Secretary to act in his stead for the purpose of the case.

RULE 13.

(a) Every complaint regarding the professional conduct of a member of the profession shall be in writing in duplicate. It should set out, in the form of a statement, the facts constituting the conduct complained of with such explanation of the

circumstances as may be necessary. It should contain the name of the member of the profession complained of, the names and particulars of other persons concerned together with particulars of times and places so far as may be required for the purpose of the investigation. It should be as brief as is consistent with clearness and completeness. Argument or immoderate language should be avoided. It should be confined to facts and should indicate persons who can establish such facts.

(b) If the member of the profession whose conduct is complained of, that is, the Respondent, is a Member of the Branch, the duplicate of the complaint shall be sent to him by the Honorary Secretary of the Branch with a covering letter advising him that the complaint is before the Ethics Committee for investigation and adjudication; and requesting him to answer the complaint as soon as possible by stating the matter from his point of view and to send his answer in duplicate so that one copy may be sent to the Complainant.

(c) On receipt of the Respondent's answer, the Honorary Secretary of the Branch shall send the duplicate thereof or, in the absence of a duplicate, a copy thereof, to the Complainant with a request that, in the event of his communicating further, he shall send his reply in duplicate so that one copy may be sent to the Respondent.

(d) On receipt of the Complainant's reply to the Respondent's answer, the Honorary Secretary of the Branch shall send the duplicate thereof or, in the absence of a duplicate, a copy thereof, to the Respondent, with a request that, in the event of his communicating further, he shall send his further answer in duplicate so that one copy may be sent to the Complainant.

(e) The process of alternate answer and reply shall be continued until the Ethics Committee is satisfied that the Respondent has had sufficient opportunity of answering the complaint.

RULE 14.

The complaint and answer and subsequent communications arising therefrom shall be submitted to the Ethics Committee by the Honorary Secretary of the Committee, and the Committee shall thereupon proceed to investigate the facts of the case as appearing therefrom. For the purpose of the investigation, the Committee may take such further evidence, documentary or oral, as shall be deemed necessary; no written or oral evidence shall be received from persons other than Members of the British Medical Association; provided that neither party shall be present at any Meeting of the Committee at which the evidence, documentary or oral, is considered, unless it is otherwise determined by the Committee.

RULE 15.

If the case is found by the Committee to be one only affecting the parties personally, the Committee shall have power to decide the case, unless either of the parties dissents.

RULE 16.

In other cases the Ethics Committee shall, after due investigation, present to the Branch Council:—

- (1) A Report of the facts as found by the Committee from the evidence placed before it, and
- (2) A Recommendation to the Council in one of the following forms:—
 - (i) That the Council express the opinion that the complaint has not been established.
 - (ii) That the Council express the opinion that no offence has been committed against the Rules (or Resolutions) of the Branch, or, as the case may be, against the generally accepted principles of professional conduct and that no action be taken.
 - (iii) That the Council express the opinion that the complaint is frivolous and that the case be dismissed.
 - (iv) That the Council express the opinion that..... has committed an indiscretion and error of judgment, but that his conduct does not call for censure.
 - (v) That the Council express the opinion that..... has violated:—

- (a) the Rules (or Resolutions) of the Branch, and
- (b) the generally accepted principles of conduct (strike out (a) or (b) if not required), but that, in consideration of

faults on the part of others concerned, the case be dismissed.

(vi) That the Council express the opinion that..... has violated

(a) the Rules (or Resolutions) of the Branch, and

(b) the generally accepted principles of professional conduct (strike out (a) or (b) if not required) and resolve that he be, and hereby is, censured.

(vii) That the Council express the opinion that the conduct of..... has been (or is)

(a) in contravention of the Rules (or Resolutions) of the Branch, and

(b) detrimental to the honour and interests of the Association, and

(c) detrimental to the honour and interests of the medical profession, and (if a Member of the Branch)

(d) resolve that he be informed of this finding of the Council and allowed until..... to re-consider his position, that the Ethics Committee be instructed to report in due course to the Council upon his reply, if any, and that, if upon such further report the Council shall consider his reply unsatisfactory, or if no reply be received within the time specified, the propriety of his remaining a Member be considered by the Council (strike out (a), (b), (c), or (d) if not required).

(viii) That the Council express the opinion that the conduct of..... has been (or is)

(a) in contravention of the Rules (or Resolutions) of the Branch, and

(b) detrimental to the honour and interests of the Association, and

(c) detrimental to the honour and interests of the medical profession, and (if a Member of the Branch)

(d) resolve that the propriety of his remaining a Member be considered by the Council. (Strike out (a), (b), (c) or (d) if not required.)

RULE 17.

If the member of the profession whose conduct is complained of is not a Member of the Branch, the Honorary Secretary of the Branch shall arrange for the Honorary Secretary of the Ethics Committee to submit the complaint to the Committee and the Committee shall thereupon determine whether or not the practitioner concerned shall be communicated with and, if so, in what manner. In the event of the practitioner consenting to the complaint being investigated and adjudicated upon by the Ethics Committee and the Council in accordance with these Rules, a copy of which shall be forwarded to him for his information, the procedure to be followed in such investigation and adjudication shall, except in so far as it may be inapplicable, be the same as that set out in these Rules in the case of a Respondent who is a Member of the Branch.

RULE 18.

All communications from the Ethics Committee or the Council to the parties or other persons concerned and the Report and the Recommendations of the Committee and other communications to the Members of the Council and all notices of Meetings containing notice of ethics matters to be considered thereat shall be marked "Private and Confidential" and shall be issued in sealed envelopes marked "Private and Confidential."

RULE 19.

Members who have taken part as Members of the Ethics Committee in the investigation of a case shall be entitled to take part in the consideration by the Meeting of the Council of the Report of the Ethics Committee on such case, and to speak and vote thereon as individual Members of the Council.

RULE 20.

On the reception of the Report and Recommendation of the Ethics Committee by the Branch Council there shall be no discussion on the Report of the facts as found by the Committee, and no other than the following motions shall be in order on the Report or the Recommendation:—

(a) That the Report of the Ethics Committee be approved, and that the Recommendation be adopted as follows:—

(b) That the Report of the Ethics Committee be approved, but that the Recommendation be amended as follows:—
That the Council express the opinion that.....

(One of the alternative forms of Recommendation which it would have been permissible for the Committee to make may be inserted, and no other.)

(c) That the Report and the Recommendation of the Ethics Committee be referred back for further consideration.

RULE 21.

A copy of the Resolution of the Council shall be sent by the Honorary Secretary of the Branch to each of the parties concerned.

RULE 22.

If the practitioner shall make amends or express regret to the satisfaction of the Council, it shall be competent for the Council to rescind the Resolution of censure passed under Rule 16 (2) (vi).

RULE 23.

The finding of the Council upon a case shall be final, unless new facts shall subsequently be brought forward which, in the opinion of the Council, justify the case being re-opened.

RULE 24.

It shall be the duty of every Member of the Branch to afford all reasonable assistance to the Ethics Committee and to the Council in the investigation of complaints regarding the professional conduct of individual members of the profession, and any party to a case shall be required to furnish for such purposes such number of copies (not exceeding ten) as may reasonably be required of any document submitted by him for the consideration of the Committee or Council.

RULE 25.

It is undesirable that a Member of the Branch should meet in consultation or accord any professional recognition (other than such as may be necessary in the discharge of an official duty by a Public Medical Officer or in circumstances of great urgency affecting the life of a patient) to a medical practitioner who shall have been declared by Resolution of the Council to have acted in contravention of any Rule or Resolution of the Branch as to professional conduct, of which such practitioner shall be proved to have had notice in accordance with these Rules, or who shall have been declared by Resolution of the Council to be deemed guilty of conduct detrimental to the honour and interests of the profession, provided that

If the Council shall, after the adoption of a Resolution as herein defined, subsequently resolve that in the opinion of the Council the conduct of the practitioner referred to in such Resolution is no longer deserving of censure, this Rule shall cease to apply to such practitioner, and the decision of the Council shall be circulated in the same manner as the original Resolution of censure.

RULE 26.

(a) In every case in which the Council shall, after due inquiry in accordance with these Rules, have passed a Resolution declaring that in the opinion of the Council the conduct of any practitioner, whether by contravention of the Rules or Resolutions of the Branch, or otherwise, has been (or is) detrimental to the honour and interests of the medical profession, it shall be the duty of the Honorary Secretary of the Branch, if so directed by the Council, to cause such Resolution to be brought directly to the knowledge of every Member of the Branch by means of a Notice in the form appended hereto, which Notice shall be over the name of the Honorary Secretary.

(b) In any case in which the Council shall, at the time of, or subsequently to, the adoption of a Resolution of the nature contemplated by paragraph (a) of this Rule, have also resolved that, in the opinion of the Council, it is desirable that such Resolution shall be brought officially to the notice of any specified Branches of the Association, it shall be the duty of the Ethics Committee, subject to the approval of the Council, to cause a copy of the said Resolution to be transmitted by the Honorary Secretary of the Branch to the Honorary Secretary of the Branches so specified.

FORM OF NOTICE REFERRED TO IN PARAGRAPH (a) :—

BRITISH MEDICAL ASSOCIATION.

.....Branch.

(PRIVATE AND CONFIDENTIAL.)

NOTICE.

In pursuance of Rule 25 of the.....Branch. Notice is hereby given that at a Meeting of the Council held at.....on the.....day of....., a Resolution in the terms of Rule 16 (2) (viii), (a), (b), (c) and (d) of the Rules of the Branch was duly passed.

.....
Honorary Secretary.

(NOTE.—All notices such as the above should be circulated in sealed envelopes, and marked "Private and Confidential, for the use of Members of the.....Branch exclusively.")

Federal Council.

At the meeting of the Federal Committee, held on April 4, 1928, it was resolved that steps be taken to form a federal council for the Branches in Australia in accordance with Article 16 and By-Law 23. The Article is as follows:

Federal Councils representative of the Branches in any area outside the United Kingdom defined and approved by the Council may be formed in the manner and for the purposes specified in the By-Laws.

By-Law 23 is as follows:

(i) The Branches in any defined area outside the United Kingdom which shall be approved by the Council for the purpose may form a Federal Council consisting of Members of the Association representing each of the Branches concerned for the purpose of carrying out the objects of the Association on behalf of those Branches collectively within the area so defined and approved. Subject as hereinafter provided any such Federal Council may be corporate or unincorporate.

(ii) Any proposal for the formation of any such Federal Council specifying the area in which the same is intended to act and its constitution, powers and duties, shall be submitted by the Branches concerned to the Council and no such proposal shall become operative unless and until the same shall have been approved by the Council.

(iii) This By-law shall apply to a Corporate Branch subject and without prejudice to anything contained in the Memorandum and Articles of Association or other the instrument of foundation or regulations of such Branch.

In pursuance of this resolution the Honorary Secretary had drafted a constitution of the proposed new body and submitted draft Memorandum and Articles of Association for consideration of the Committee.

The proposed Memorandum was considered paragraph by paragraph. It was explained that the Memorandum was practically identical with the Memorandum of the British Medical Association.

The draft Memorandum and Articles of Association were considered and approved with certain amendments. The draft By-Laws were also considered and discussed. They were approved with a few emendations.

It was then resolved that the draft Memorandum and Articles of Association and By-Laws of the Federal Council of the British Medical Association in Australia as approved should be put into the hands of the solicitors of the Federal Committee with the view to their being completed before being submitted to the Branches for consideration and approval.

Australasian Medical Congress.

The balance sheet of the second session of the Australasian Medical Congress (British Medical Association), Dunedin, 1927, was submitted and received.

Date of Third Session.

The Honorary Secretary announced that the date of the third session of Congress in Sydney had been fixed for September 2 to 7, 1929.

President of Congress.

A message had been sent by the New South Wales Branch to the effect that Sir Alexander MacCormick had resigned his position of President of Congress on account of the illness of Lady MacCormick, necessitating their absence from Australia. The Council of the Branch had nominated Dr. G. H. Abbott for the position. It was resolved that Dr. Abbott be elected President of the third session of Congress.

Patrons.

The Honorary Secretary further announced that His Excellency the Governor-General of Australia, His Excellency the Governor-General of New Zealand, His Excellency the Governor of New South Wales, His Excellency the Governor of Victoria, His Excellency the Governor of South Australia, His Excellency the Governor of Queensland, His Excellency the Governor of Western Australia and His Excellency the Governor of Fiji had accepted the invitation to be Patrons of the third session of Congress.

It was resolved that His Excellency Sir Hugh C. Clifford, G.C.M.G., G.B.E., Governor and Commander-in-Chief of the Straits Settlements, the Honourable T. R. Bavin, the Premier of New South Wales and the Chief Civic Commissioner of Sydney be invited to be Patrons of the third session.

Vice-Presidents.

The Honorary Secretary also notified the Committee that Dr. F. A. Pockley, Sir George Syme, Major-General G. W. Barber, C.B., C.M.G., D.S.O., V.D., Director-General of Army Medical Services of the Commonwealth, Dr. J. H. L. Cumpston, C.B.E., Director-General of Health of the Commonwealth and the late William Thornborough Hayward had accepted appointment as Vice-Presidents of Congress.

Honorary Members of Congress.

The Executive Committee of Congress intimated that it had nominated the following for election as honorary members of Congress. It was resolved that they be elected. Two Civic Commissioners of the City of Sydney, the Acting Chief Justice of New South Wales, the President of the Legislative Council of New South Wales, the Speaker of Parliament of New South Wales, the Dean of the Faculty of Medicine of the University of Sydney, the Dean of the Faculty of Dentistry of the University of Sydney, the Dean of the Faculty of Veterinary Science of the University of Sydney, the professors of the first year of medicine in the University of Sydney, the Minister of Public Health of New South Wales, the Director of Education of New South Wales, the President of the Trustees of the Art Gallery, the President and Director of the Australian Museum, the principal Librarian of the Public Library of Sydney, the Director of the Botanic Gardens of Sydney, the Director of the Technical College of Sydney, the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, the Deputy-Chancellor and the Vice-Chancellor of the University of Sydney, the Registrar of the University of Sydney, the President of the Linnean Society of New South Wales, the President of the Royal Society of New South Wales, the President of the Dental Board of New South Wales, the President of the Royal Zoological Society of New South Wales, the President of the Pharmaceutical Society of New South Wales, the President of the Australasian Association for the Advancement of Science, the Commissioner of Police of New South Wales, the Chief Commissioner for Railways of New South Wales, the Government Statistician of New South Wales, the Government Analyst of New South Wales, the Government Entomologist of New South Wales, the Town Clerk of Sydney, Professor T. Bailliford Robertson, Mr. A. W. Green, Professor W. Whitridge Williams, the Principal Medical Officer of Hong Kong, the Principal Medical Officer of Singapore, the Principal Medical Officer of Manila.

Representation of the British Medical Association.

The Executive Committee informed the Federal Committee that Sir Ewen Maclean, the President of the British Medical Association, had been delegated to attend the third session of Congress as official representative of the Association. The dates on which Sir Ewen Maclean would arrive at the several capital cities of Australia would be communicated to the members of the Committee and to the medical profession at a later date.

Gold Medal of the British Medical Association in Australia.

At its last meeting in April, 1928, the Federal Committee determined to present the gold medal of the British Medical Association in Australia to Dr. W. H. Crago as a mark of appreciation of his valuable work for the Federal Committee, the New South Wales Branch and the medical profession in Australia. In accordance with the wishes of the chairman an opportunity had been seized during the time of the meeting in Sydney of the fellows of the College of Surgeons of Australasia in the first week of March, 1929, to make a preliminary presentation of the medal to Dr. Crago. Sir George Syme had conducted the proceedings in the presence of a number of prominent members of the medical profession from various States. The presentation had given Dr. Crago great pleasure and gratification. It was proposed to hold the investiture at the time of the third session of Congress in September.

Site in Federal Capital Territory for the Federal Committee.

In August, 1926, the Federal Committee resolved to make application to the Commission for the grant of half an acre of land in the Federal Capital Territory to be reserved for medical scientific purposes on the same conditions as those granted to the College of Surgeons of Australasia. A letter had been sent to the Commission to this effect. In September last a reply had been received, intimating that the matter would have the consideration of the Commission. The letter was received.

Medical Officers of the Defence Department.

In August, 1928, the Federal Committee considered a request of the Victorian Branch to take action to insure that medical officers in charge of permanent troops should receive better remuneration. It was resolved on the information before the Committee that the Minister for Defence should be asked to arrange that the remuneration of medical officers of the Defence Department be not less than the contract rate of remuneration in operation for medical attendance on members of friendly society lodges, together with adequate allowances for administrative and other duties. The Honorary Secretary informed the Committee that a letter had been addressed to the Minister in August and that a reply had been received. The Minister stated that on inquiry he had ascertained that the pay of medical officers was based on the principles set out in the resolution of the Federal Committee. It was moved that the reply should be forwarded to the Victorian Branch. Dr. F. L. Davies contended that the medical officer on whose behalf the complaint had been made, had not been receiving remuneration at this rate. It was thought that if it were known that the Defence Department claimed to base the pay of medical officers on the principle set out in the Committee's resolution, any existing exceptions could be remedied without difficulty.

Widows and Orphans of Deceased Soldiers.

The Honorary Secretary directed the attention of the Federal Committee to the attitude of the Repatriation Commission in regard to the medical attendance on the widows and orphans of deceased soldiers whose death had been due to war service, and to the widowed mothers of deceased unmarried soldiers. In 1924 the Repatriation Commission had invited the medical officers of friendly society lodges to treat these widows and orphans at lodge rates. It had been proposed to enter them into friendly societies at the expense of the Commission. The Federal Committee had recommended the members of the Branches

in Australia to accept these widows and orphans on their lists. It had been reported by the Victorian Branch at the meeting of the Federal Committee in August, 1928, that the Repatriation Commission had refused to pay mileage in the case of a very poor patient who had been quite unable to pay this charge. The distance travelled had been considerable and the actual cost of the journey had been greater than the whole year's contribution made on behalf of the widow. The Commission had been requested by the Federal Committee at its last meeting to render itself responsible for the incidental expenses incurred by the medical officer of friendly society lodges in the course of the treatment of Repatriation Department beneficiaries when such expenses could not be paid by the beneficiaries. The Department had replied to the effect that while it was undesirable for a medical practitioner to incur loss in carrying out the medical attendance on the widows and orphans of deceased soldiers, it, the Department, could not make itself responsible for incidental expenses which might include surgical operations and other services involving an unknown amount of money.

The opinion was expressed that the reply was very unsatisfactory. The Department had assumed a responsibility in regard to the persons concerned, by arranging with the friendly societies and the medical officers of the lodges to admit them to medical benefit without examination and to render this service as a patriotic act. The proposal had been that the widows and orphans would receive medical benefit on the same terms as lodge patients through the machinery of the lodges, but it had not been indicated that when the patient was without means, necessary additional services should be carried out at the expense of the medical practitioner. It was resolved that the Department should be again communicated with and the position further explained.

A further communication had been received from the Repatriation Commission setting out that on certain occasions considerable delay had occurred in the notification by the medical officer to the grand lodge secretaries of the death of beneficiaries or of their removal from the area of the medical officer. This had resulted, it was contended, in payments to medical officers in respect of persons to whom benefits could not have been afforded. The suggestion was made that adjustments should be made between the medical officers and branch lodges in respect of the moneys overpaid.

It was pointed out that if a beneficiary died, the Repatriation Commission should be in possession of the information without any notification from the lodge medical officers. After a short discussion it was resolved that a communication be sent to the Repatriation Commission calling its attention to the fact that the friendly society lodge agreements were not based on payment for services rendered, but took the form of a contract to render services if required. If a beneficiary were removed to another area, she would be transferred to the list of another lodge medical officer and the periodical payments would be made to the second medical officer. Adjustments could be made as was usual in friendly society lodge practice.

Naval Medical Officers.

The subcommittee appointed by the Federal Committee in April, 1928, to inquire into and report on the conditions of service of medical officers in the Royal Australian Navy presented its report to the last meeting of the Federal Committee (see THE MEDICAL JOURNAL OF AUSTRALIA, August 25, 1928, page 251). This report had been forwarded to the Department of Defence and a reply from the Secretary of the Department had been received.

Sir George Syme stated that Dr. R. H. Fetherston and Dr. R. Downes had carried out nearly all the work of the subcommittee.

The reply was as follows:

1. The views of the Federal Committee regarding the amalgamation of Naval Medical Services with those of the Australian Army Medical Services and the Royal Australian Air Force Medical Services have been noted.
2. The present holder of the office of Director of Naval Medical Services is receiving the same rates of pay as

his predecessor. It is recognized that there are instances where the emoluments of officers of various branches serving in the Navy Office are less than those of similar ranks in ships or Naval establishments. This is due chiefly to charge pay of specialist allowances being paid to the latter. No reason is seen, however, for increasing the emoluments of positions in the Navy Office.

3. The remarks as to retiring are interpreted to suggest that more posts for the rank of Surgeon-Captain should be established. The present stage of development of the Royal Australian Navy has not warranted this, but the desirability of such action is reviewed from time to time by the Naval Board.

4. Under present arrangements the Director of Naval Medical Services has direct access to the Naval Board, being in constant touch with the second Naval Member. The constitution of the Naval Board does not admit of his having the right of access to the Minister. It is to be taken as an axiom that the recommendations of the Director of Naval Medical Service on strictly professional matters are not vetoed. He is the Naval Board's professional adviser in these matters. As to the disposition of officers, this is constitutionally the responsibility of the second Naval Member. It is essential for Naval administration that there shall be one head for the control of the movements of Naval officers of all branches, but the advice of the Technical Director is always sought.

5. The question of payment of deferred pay received consideration early in 1928 and revised regulations were promulgated. From the attached statement of the details which are now issued to applicants for entry into the Navy as surgeon, it will be observed that applicants can be under no misapprehension as to the conditions governing the payment of deferred pay.

6. I am to add that the rates of pay of the Royal Australian Navy are reviewed periodically and the representations in the report transmitted by you will have due consideration.

The opinion was expressed that in the reply to paragraph 3 of the report if only one Surgeon-Captain could be appointed, it would be advisable to raise the retiring age of officers of lower rank to fifty-five. In connexion with the fourth paragraph it was pointed out that the Director-General of Army Medical Services had direct access to the Minister. It appeared that the Director of Naval Medical Services was given only indirect access to the Naval Board through the second Naval Member and none to the Minister. It was stated that his recommendations had been vetoed in the past.

It was resolved that a further communication be sent to the Department.

Travelling Medical Examiners for Life Assurance Companies.

The Honorary Secretary reported that he had communicated with the Secretary of the Life Offices' Association of Australia and had forwarded the proposals of the Federal Committee in regard to the engagement and remuneration of travelling medical examiners for life assurance companies. A reply had been received to the effect that the proposals could not be entertained. The Honorary Secretary advised that he understood that in no circumstances would the offices approve of any financial arrangement being made between the travelling medical examiners and the agents. Information was given to the Committee to the effect that while the inspectors during visits to country centres made substantial commissions, the travelling medical examiners were often scarcely able to cover their necessary expenses. It was resolved to make further representations to the Life Offices' Association.

Remuneration of Ships' Surgeons.

Dr. R. H. Todd conveyed a request from the New South Wales Branch to the Federal Committee to consider the question of negotiating with shipping companies trading between Australia and overseas ports with a view to the better remuneration of surgeons. He explained that in 1922 the Committee had dealt with the remuneration of ships' surgeons on ships engaged in Australian waters.

It was held that the same basis should obtain in regard to the remuneration of ships' surgeons in overseas vessels as in those of the coastal service. It was recognized that young graduates at times were content to give their services as ships' surgeons for a single voyage with little or no remuneration in order to give them opportunities of conducting post-graduate studies in Europe, but it was thought that this occasional circumstance need not interfere with the establishment of the principle that reasonable terms should be secured for medical practitioners engaged in the ordinary way as ships' surgeons. It was resolved that steps be taken to induce the companies concerned to accept the same basis for remuneration as the companies controlling the coastal service had adopted.

Conference on Contract Practice.

On the motion of Dr. E. S. MEYERS it was proposed that the Federal Committee arrange a conference of members representing contract practice in each State to be held during Congress week in September. The business of this conference would be a discussion on contract practice and national insurance. Dr. Meyers expressed the view that it would be a good opportunity when a large number of medical practitioners were gathered together to ascertain the views of those engaged in contract practice. He pointed out that the deliberate opinion of the practising members of the medical profession on important matters affecting the medical profession was rarely obtainable. The question of friendly society lodge practice had not yet been settled in Australia and a definite policy in regard to national insurance had not been formulated.

It was asked whether the Queensland Branch proposed that a conference should be held of all medical practitioners interested in contract practice or a conference of delegates appointed by each Branch. Dr. Meyers stated that it was thought that every practitioner engaged in contract practice should be permitted to attend the conference, but he was prepared to recommend that the Branches should appoint delegates who could open the discussions. He would like a subcommittee of the Federal Committee to consider the matter and to make arrangements for the holding of the conference.

Other members pointed out that the Federal Committee had considered and reported on contract practice and on national insurance. It was noted that it would be difficult to find a suitable time for a conference of this kind during the period of Congress and it was thought that if such a conference were desirable, it would be better arranged by the Branches. Dr. Meyers's motion was put to the meeting and was lost.

Personal Votes.

On the motion of SIR GEORGE SYME from the chair it was resolved to send a message of sympathy to the relatives of the late William Thornborough Hayward.

On the motion of Dr. J. ADAM DICK, seconded by SIR HENRY NEWLAND, it was resolved to congratulate Dr. J. H. L. Cumpston, the Director-General of Health of the Commonwealth, on the honour of Commander of the Most Distinguished Order of Saint Michael and Saint George.

Reference was made to the retirement from the Committee of Dr. W. N. Robertson, C.B.E., who had acted as the Vice-Chairman for many years, and of Dr. R. H. Fetherston. It was unanimously resolved to send a message of regret that they had retired and of appreciation of their long and valuable services to the Committee.

On the motion of Dr. J. ADAM DICK, C.M.G., seconded by Dr. GREGORY SPROTT, the thanks of the Committee were accorded to Sir George Syme for the admirable manner in which he had conducted the business of the Committee and for his hospitality to the members, to the Council of the Victorian Branch for having provided accommodation to the Committee and for its hospitality to the members.

Date and Place of the Next Meeting.

It was determined that the next meeting of the Federal Committee should be held in Sydney on September 2, 1929, at two o'clock in the afternoon.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in the Medical Society Hall, East Melbourne, on December 12, 1928, Mr. B. T. ZWAR, the President, in the chair.

The Cancer Problem.

DR. JULIAN SMITH read a paper entitled: "The Cancer Problem" (see page 576).

DR. T. CHERRY expressed appreciation of the paper. He considered that the facts put forward in the first part of the paper were open to more than one interpretation. Dr. Canti's film was literally the sight of a lifetime and clearly showed the steady advance which was being made in the most minute branches of experimental work. He considered that the Branch owed a great debt of gratitude to Dr. Julian Smith.

DR. HERMAN LAWRENCE said that as the pioneer of radium therapy in Australia he wished to refer to two points particularly. First, as to the motion of cells, he had once shown the late Harry Allen a microscopical specimen of a *Demodex folliculorum* in its cocoon, which, they thought, might have been formed by active movements of the surrounding epithelial cells. Secondly, in the treatment of epithelioma of the lip, greatly improved results had been obtained by the use of radium needles embedded in the substance of the tumour.

Dr. Lawrence did not think that the new line of attack was the sole cause of the improvement, but considered that serous exudation, caused by the needling, into the stagnant mass of immobilized cells helped by improving the circulation of the chemical bodies inhibiting cell growth.

DR. BASIL KILVINGTON who had recently returned from England, said that he had seen a good deal of radium treatment in London with Dr. Julian Smith, particularly at the Westminster Hospital. He had come to doubt whether excision of the tongue was now justifiable for cancer, especially when extension of the growth had occurred into the floor of the mouth or the jaw. He considered that cancer of the tongue and mouth and possibly also of the lip, were now better treated by radium than by surgery. In London Mr. Dunhill had treated patients with inoperable breast cancer with radium with good results and had commenced to treat patients with operable growths with success and indicated that he favoured this method.

DR. H. FLECKER asked whether Dr. Julian Smith had seen any use of monochromatic X ray therapy as distinct from filtered X rays.

MR. B. T. ZWAR expressed his personal appreciation of the paper and of the film. He had seen the latter in Edinburgh eighteen months before, but owing to the method of demonstration, it had not been so impressive. There was no need for him to express the thanks of the Branch, as the very large attendance was sufficient evidence of the appreciation of members.

DR. JULIAN SMITH in reply said that he appreciated the hearty reception with which his efforts had been rewarded. Nine months before he had gone away to play, but had stayed to work. He had felt that he was not up to date in one department of professional knowledge. At the congress in England such giants as Ewing had spoken, giving an exposition of the aetiology of cancer and Moynihan had given a confident description of its surgical treatment. In such surroundings, Dr. Smith said, he became imbued with the spirit of a crusader in the cause of cancer research and hoped to stimulate thought along these lines in Australia. He claimed credit for no original thought in the matter, being only a reporter of the work of others. The history of radium research, in which the French had been leaders from the beginning, had been fraught with accidents, misunderstandings and disasters.

In the therapeutic use of radium the whole of the cancer tissues and the surrounding tissues must be subjected to a uniform irradiation of optimum intensity. Deep metastases could not be treated efficiently by this method and the same difficulty occurred in deep X ray therapy. Any attempt to treat malignant glands in the neck with radium

without making a complete surgical excision failed and was contrary to Regaud's principles of treatment. The modern method could be described as small quantities of radium evenly distributed throughout the affected area.

Referring to monochromatic X rays, Dr. Smith said that this form of irradiation was the subject of an extremely selective research at present. A monochromatic beam had been produced and the embryonic tissue of the chick had been subjected to it. There was some evidence that different wave lengths produced different effects on embryonic tissue.

Dr. Smith concluded by saying that he would convey the thanks of the meeting to Dr. Canti for his kindness in allowing him (Dr. Smith) to procure the film.

ANNUAL MEETING OF THE MEDICAL ASSOCIATION OF SOUTH AFRICA (BRITISH MEDICAL ASSOCIATION.)

THE following letter has been received by the Federal Committee of the British Medical Association in Australia:

Dear Sir: I have been instructed by my executive committee to extend to the office-bearers and members of your association a cordial invitation to attend the second annual meeting of this association. For your information I enclose a copy of Circular "A."

Yours faithfully,

W. GORDON ROBSON,

Joint Honorary Secretary,

Executive Committee of the Cape Midland Branch of the Medical Association of South Africa (British Medical Association).

February 18, 1929.

The enclosure is a preliminary programme of the annual meeting. The opening ceremony will take place in the afternoon of May 13, 1929, and will be followed by an "at home" given by the President and Mrs. Leith. Meetings of the sections will be held on May 13, 14, 15, 16 and 17, 1929. The annual meeting of the Medical Association of South Africa (British Medical Association) will take place on May 15, 1929, and the meetings of the Federal Council will be held on May 14 and 18, 1929. There will be five sections, namely, the Section of Medicine and Mental Hygiene, the Section of Surgery, the Section of Public Health, the Section of Obstetrics and Gynaecology and the Section of Special Subjects.

A considerable number of entertainments, excursions, reunions is announced. Members of the Branches of the British Medical Association in Australia who contemplate a visit to South Africa in May, should communicate with Dr. R. H. Todd, Honorary Secretary of the Federal Committee, B.M.A. Building, 30 to 34, Elizabeth Street, Sydney, or with the Editor of this journal without loss of time for further particulars.

Obituary.

HUGH DYNMYRNE LATHROP MURRAY.

THE medical profession in Victoria, the Melbourne Hospital and many other institutions have suffered a severe loss in the death on March 17, 1929, of Hugh Dynmyrne Lathrop Murray. He was the third son of the late Kynaston Lathrop Murray, at one time a commissioner of the Victorian Railways. He was born on September 1, 1869, and was therefore in his sixtieth year. He was educated at Queen's College, St. Kilda, and later he entered the Medical School of the University of Melbourne. As a student he took an active part in various forms of sport and was an unusually good athlete. After a couple of years he elected to travel to the other side and continued his medical studies in Edinburgh. In 1892 he secured the diplomas of licentiate of the Royal Colleges of Physicians

and Surgeons of Edinburgh and of the Faculty of Physicians and Surgeons of Glasgow. In 1894 he took the fellowship of the Royal College of Surgeons of Edinburgh. In 1904 he secured the F.R.C.P., Edinburgh. After qualification he was appointed House Physician at the Royal Infirmary, Edinburgh, for a year and later Medical Superintendent of the Provident Dispensary. He returned to Victoria in 1894 and settled in practice in East Malvern, where he soon became popular and eminently successful.

Electro-therapeutics, physical therapy and orthopedics attracted his attention at an early stage of his professional career and as is usual when a practitioner manifests a predilection for a particular branch of medical study, he soon acquired skill and aptitude in his specialty and accumulated much knowledge concerning it. As soon as he had established his reputation as a competent exponent of medical electricity he was appointed to the staff of the Melbourne Hospital to take charge in an honorary capacity of the department devoted to this branch of work. He applied himself with energy to the work and was very successful in extending the scope and utility of his department as well as of the departments of massage and of physical therapy. His colleagues recognized the value of his advice and help and his patients benefited greatly by his skill and fine judgement. He conducted a practice in Collins Street, Melbourne, as well as at Malvern.

In 1916 he enlisted for service with the Australian Imperial Force with the rank of Captain. He was attached to the Army Medical Corps. In 1918, after a period of valuable service, he returned to Australia and was appointed to the Australian Military Forces with the rank of Honorary Major. In 1919 he was given the temporary rank of Lieutenant-Colonel. He became Medical Officer to the training area of Caulfield, in the Third Military District. About this time he was appointed Medical Officer in charge of the Massage and Electrical Department at the Number 11 Australian General Hospital, Caulfield. He was appointed Honorary Medical Officer to the Salvation Army Home for Inebriate Women in Caulfield, one of the few great institutions of its kind in Australia. In all these activities Hugh Lathrop Murray distinguished himself by his unselfish devotion to his patients and by his whole-hearted application to the science and art of his specialty. He contributed several thoughtful articles to the medical press in Australia. His life was a full one, full of important details. The record, however, would seem to be no indication of fine deeds. Year in, year out he achieved more and more and won the affection and gratitude of his many patients. It is impossible to reflect the value of a life of this kind in a short summary of facts.

For several years his health had been failing, but he fought against his waning strength and energies until 1928, when he retired from practice in the hope of regaining health by rest. The hope was vain. After a year his condition was much worse and as stated above he succumbed on March 17 of this year.

Of his prowess as a champion lacrosse player the late George Adlington Syme writes. It is a sad privilege for us to publish posthumously a high appreciation of Hugh Lathrop Murray by this great surgeon. The note is one of the last messages he has given to the members of his beloved profession. Hugh Dynnyrne Lathrop Murray was an ardent worker for his church, a keen and skilled musician and an upright and worthy citizen. The sympathies of the medical profession are extended to his widow and three sons.

The late George Adlington Syme wrote:

It was my privilege to have known the late Hugh Lathrop Murray since the time when he was a student at the Melbourne Medical School. In those days he was distinguished as a very fine lacrosse player and also had a splendid record as an all round athlete. He possessed a very fine and well trained voice and all his life was greatly interested in music. He did not complete his medical course in Melbourne, but went to Edinburgh, where he obtained the Fellowship of the College of Surgeons and of the College of Physicians of Edinburgh. On his return he settled in practice at Caulfield and also had

rooms in Collins Street, where he practised as a medical electrician. In 1900 he was appointed Honorary Medical Electrician to the Melbourne Hospital, where he also had charge of the physiotherapy and massage departments. Under his able supervision all these departments were greatly developed and extended. Dr. Murray was the Honorary Medical Officer to the Inebriate Home for Women established by the Salvation Army at Waverley Road, East Caulfield, where he did very excellent work. All his life Hugh Lathrop Murray was a very earnest member of the Church of England and took a prominent part in all the activities of his local church, giving to its services both time and money. His health had been bad for many years before his death. He underwent two operations for renal calculus and also suffered severely from *angina pectoris*. He endured to the end, patiently, bravely and cheerfully, continuing all his activities until he was absolutely compelled to retire shortly before his death.

Hugh Lathrop Murray was courageous, kindly and sympathetic, devoted to his family, his work and public service. He will be greatly missed by a large circle of friends and patients and especially at the Melbourne Hospital, with which he was so long connected and which he served so well and faithfully.

Dr. R. R. Stawell writes:

Dr. Hugh Lathrop Murray, F.R.C.S. (Edinburgh), F.R.C.P. (Edinburgh), practised in Collins Street and Waverley Road, East Malvern, for thirty years. For some years past he had been in ill health and at the end of last year sold his practice and retired, hoping that the rest would improve him. Unfortunately, however, this was not the case and he died at 274, Orrong Road, Caulfield, on March 17, 1929.

He was the third son of the late Kynaston Lathrop Murray, late Commissioner of the Victorian Railways. He was educated at Queen's College, St. Kilda, and afterwards attended the Melbourne University. After this he went to Edinburgh and graduated as Fellow of the Royal College of Surgeons and Fellow of the Royal College of Physicians. He also was a resident at the Edinburgh Royal Infirmary for some time. He then came back to Victoria and set up his practice as stated above. He was a member of the honorary staff of the Melbourne Hospital for many years and went to the war in 1916. At the time of his death he held the rank of Lieutenant-Colonel. Upon his return to Australia he was a member of the honorary staff of the Number 11 Australian General Hospital at Caulfield in charge of the Massage and Electrical Department.

Dr. Murray always took a keen interest in church work and was a member of the Anglican Synod and the Church Warden of Saint John's Church of England for many years.

He also took a keen interest in amateur sport and for some years held interstate rank as a lacrosse player as being the champion long thrower of the world.

Dr. Murray was also a keen musician and was a member of the Melbourne Liedertafel.

Correspondence.

THE BACTERIAL FLORA OF INFANTS' STOOLS.

SIR: Dr. Lorimer Dods's courage in applying himself to the elucidation of the difficult and unsatisfactory question of the bacteriology of the infant's stool and its clinical application is to be sincerely admired; the more so since Sydney has the unenviable record of the highest infantile mortality of any city in Australia for the last twenty years. From his unbiased devotion to a tedious task two main results emerge. First, a further proof, if one is wanted, of the consistent effect of breast milk to lower the mortality and morbidity rate of diarrhoeal diseases, if practised from birth, but its failure, once the affection is established, due to its long latent period in changing the intestinal flora, even in health. Apart from its reflected effect on the reaction and flora of the stools, I believe that

from the beginning it has "tilled the soil" so as to raise the body defences and notably those of the liver to their maximum efficiency. The protein of cow's milk, however modified, can never produce from its inherent constitution the same good results. Though this has been generally realized, there yet remain too many of Sydney's infants who are artificially fed throughout their first summer. In Sydney of all places for reasons stated above it is almost criminal to take a baby off the breast in summer, except for very good reasons. Partial breast feeding does not protect them, though one cannot help feeling that it must help considerably. Some figures on this point would be welcome. Dr. Dods rightly emphasizes the great importance of a thorough search for parenteral infection in every breast-fed child with acute diarrhoea.

Secondly, regarding artificial feeding, at the conclusion of his article he says: "Both the feeding of living cultures of *Bacillus lactici acid* and lactic acid milk feedings proved to be unsatisfactory . . ." Certainly, so far as his own figures go, he is justified in making this conclusion, but the small series of cases available is not sufficient to condemn such a valuable adjuvant as lactic acid. The "Lactone Syrup" formula given supplies the acid in a concentration of 0.3% in a pint of mixture, whereas Marriott, Davidson and others have conclusively shown, after trying many different values over a large series of cases, that a concentration of 0.6% in whole cow's milk results in a child who in weight, physical characters and infective resistance most nearly approaches a satisfactory breast-fed infant. Looking at Dr. Dods's results, apparently one can have the choice of character of stool, type of flora or hydrogen ion concentration, as a criterion of health, since there seems to be no fixed relation between any of them. Personally, one would prefer to observe the infant himself. Dr. Dods's article, however, is not primarily concerned with this question as with a local inquiry into the bacteriology of infants' stools in Sydney and it is here that his results are of great value as a comparison with those obtained in other countries. Since the meconium is infected from the exterior and as the bacterial flora of dust and air differ in Australia and Europe, it should not be taken for granted that identical organisms will be found in infants' stools throughout the world. In this connexion the low proportion of cases harbouring *Bacillus dysenteriae* is interesting. The elucidation of these "Gram-negative" and "Gram-positive" forms would be welcome, including a study of their growth *in vitro*, involution forms, bacteriophage production *et cetera*. There is little doubt that many of the most serious cases of summer diarrhoea are not intestinal infections only, but one part of a gross tissue change and intoxication, dependent on yet little understood factors, such as ground temperature, type of feeding, environment *et cetera*. Dr. Dods has passed in rapid review a huge field of work. His further more detailed inquiries will be anticipated with interest and appreciation.

Yours, etc.,

KEMPSON MADDOX.

Sydney.

April 21, 1929.

THE LARGEST VENOMOUS AUSTRALIAN SNAKE.

SIR: In the *Records of the Australian Museum* (Sydney, February 28, 1923) Mr. J. R. Kinghorn described a new genus and species of brown snake (*Oxyuranus macleannani*), discovered on Cape York Peninsula at Coen, by Mr. William McLennan. This species is referred to the subfamily *Elapinae*, family *Colubridae*. The colour was dark brown above, with a golden sheen; the under parts and labial regions pale cream. Two specimens obtained measured 2,760 millimetres (nine feet two and one-half inches) and 2,545 millimetres (eight feet six inches) in length. The head of the larger one measured 80 millimetres. The fangs were very large, "so large that they would easily penetrate through one's finger if bitten . . . about equal in size to those of some of the vipers, such as the rattlesnake." There were several pairs of reserve fangs situated in the

gums. "On the posterior end of the maxillary bone there is only one small grooved tooth which is active, though there are three reserve teeth, one lying in the reserve pocket." "The only other Australian snake which may possess but one tooth following the fang is *Acanthophis*." This genus, comprising the death adders, is viperine in form and otherwise quite distinct. Mr. McLennan rode over the first specimen in the long grass, thinking at first that it was a black-headed python. It was destroyed by a sapling cut by an aboriginal attendant. It contained the remains of a native cat (*Dasyurus*). Venom was collected, but the tubes were corked before it had dried. It therefore fermented and lost its value, but was sent to an experimentalist.

Sir G. H. Wilkins discovered a new giant venomous brown snake in his expedition to tropical Australia in 1923-1925. This species has been named *Demansia guttata* by Mr. H. W. Parker in the *Annals and Magazine of Natural History*, Series 9, Volume XVII, 1926. It was over nine feet (2,700 millimetres) in length. The general colour of preserved specimens was a very pale brown, practically uniform or relieved by a series of about eleven dark blotches along the back. Sir G. H. Wilkins makes some references to this snake in his "Undiscovered Australia," published in 1928. At Katherine, in the Northern Territory, one midnight the black boys jumped from their sleep, crying wildly. A huge brown snake had wriggled over the hands and feet of a naked black boy whilst he was asleep. The camp soon awakened. Flaming torches were made of strips of twisted bark ignited in the hot ashes and, in this uncanny light, the dead leaves and grass were beaten with sticks and stock-whips, until the venomous intruder was dislodged and destroyed with heavy blows. In the morning two poison sacs as large as cherries were removed from behind its fangs. In the King River district of the Northern Territory on two occasions large snakes of this species invaded the camp as the explorers sat by the smudge fire, their only protection being the cheesecloth net beneath which they slept. But the serpents lost their terror under the irritation caused by sandflies and heat. Here Sir G. H. Wilkins one day in a warm dry spot uncovered a nest containing eighteen eggs of this species. Each egg was as large as a goose egg. The eggs hung together in a cluster, each soft shell being adherent to another one. The eggs were reburied and at intervals of several days an egg was removed and broken and the development of the embryo observed. When first found the young snakes were fully formed and were two feet ten inches (850 millimetres) in length. In two weeks they were almost three feet six inches (1,050 millimetres) in length.

Yours, etc.,

175, Macquarie Street, Sydney.

JOHN MACPHERSON.

April 17, 1929.

PAY BEDS IN PUBLIC HOSPITALS.

SIR: It is the expressed intention of the Victorian Government to encourage the establishment of wards for paying patients in conjunction with public hospitals. The object is to place adequate facilities and accommodation at the disposal of patients other than necessitous.

The charities intend to make no contribution to expenses of paying patients, but expect the private patient to provide revenue for charities. At present private patients mostly have enough to do to provide for themselves. The murmur of public assent, when it was announced that public hospitals would be open to all, was stimulated not mainly by desire for greater efficiency or opportunity to subscribe to charity, but the expectation of cheaper service to those now excluded.

Forty per centum of Melbourne public get their hospital nursing in public hospitals and will not pay even the cost of maintenance. Of the other 60% of Melbourne more than two-thirds have incomes less than £400 per annum and will look for concessions in charges. Experience shows the cost of nursing in pay beds is higher than the

average nursing home and the only way charities can reduce the total cost to the patient is by under payment or non-payment of staffs, either medical or nursing. The only result of this will be the patients will pay the full cost of maintenance to the hospital by transferring their resources from the doctor to the hospitals being in the atmosphere of free medical service, recuperate their exchequer by paying nothing for medical service.

The declared principle in London with regard to pay beds is: no fees will be collected from patients for medical service till full cost of maintenance has been paid, that is to say, there is no such thing as an "intermediate" patient.

This arrangement opens up a new and unexplored revenue for the public hospitals.

Looked at in another way, the population is roughly divided into A., 40% public hospital class; B., 40% intermediate; C., 20% private.

The medical profession, who do an enormous amount of work for nothing, partly recuperate themselves from Class B.—the white collar class. Class B., feeling the burden, are drifting to public hospitals. The new arrangement is that they should be invited there and seeing a sanctuary from financial worry, they will use it.

It is well to remember that inadequate statutory provision is made in the basic wage for sickness expenditure; therefore, as a rule basic wage earners who appeal for public hospital assistance cannot legally be excluded.

If the medical profession goes on juggling with this proposition, they will get into worse difficulty. We have always worked under the community plan—the richer paying for the poorer—and it is only the fact that it is breaking down that brings the whole matter up for review.

The solution of the financial aspect of this problem is not to increase the hospital Class A. by pressure on the white collar Class B., but release pressure on Class B. by payment for part time service of now honorary staffs to industrial Class A. The amount of payment and terms of service depend on the loyalty of the profession to one another. If public charities undertake hospital provision for other than necessitous, no other bodies, except churches in a fragmentary way, are likely to undertake this responsibility of adequate nursing service. All the privileges of such a system are with honorary staffs to the prejudice of the profession outside hospitals.

This means fission in professional outlook, which will place the whole profession seeking opportunity at the hands of charities and not charities grateful for free service of the profession—lay control of the profession.

Approved societies formed by friendly societies and commercial insurance companies disbursing compulsorily surplus funds as additional benefit, probably will make subventions to hospitals to maintain solvency of their insurance funds against sickness.

The preferential arrangements made by friendly societies with hospitals in New Zealand is in no way reassuring.

This matter will be before the Victorian Branch of the British Medical Association on May 16, 1929. The policy of pay beds, suburban out-patients with lay control will be established unless the Council is led to rely on the support of the Branch members for both funds and service to devise some more satisfactory policy.

Yours, etc.,

D. M. EMBELTON.

37, Collins Street,
Melbourne.
April 20, 1929.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A MEETING OF THE SENATE OF THE UNIVERSITY OF SYDNEY was held on April 8, 1929.

Dr. Harvey Sutton (Director of the Commonwealth Institute of Public Health and Tropical Medicine) was appointed to act as delegate of the University of Sydney

at the Fourth Imperial Social Hygiene Congress to be held in London in July next.

The use of the Great Hall was granted to the Nurses' Registration Board for examination purposes on May 14 and 15.

Sir Mungo MacCallum, K.C.M.G., was unanimously reelected to the position of Deputy-Chancellor of the University for the current year.

Owing to ill health Dr. W. C. Mansfield tendered his resignation as Lecturer in Diseases of the Ear, Nose and Throat. The resignation was received with regret and the Senate recorded its appreciation of Dr. Mansfield's services to the University.

Regarding the Honorary Medical Staff of Saint Vincent's Hospital, the following arrangements were approved to cover the period of the absence on leave of Sir Alexander MacCormick and Dr. J. L. McKelvey: Dr. W. Maher to act as full surgeon (in place of Dr. McKelvey), Dr. St. John Honner to act as Assistant Surgeon, Dr. W. T. D. Maxwell to act as Senior Surgeon (in place of Sir Alexander MacCormick), and Dr. P. L. O'Halloran to act temporarily on the Junior Surgical Staff.

The following were appointed Honorary Demonstrators in Pathology: Dr. O. Latham, Dr. L. H. Hughes, Dr. J. K. Maddox, Dr. G. A. Hardwicke and Mrs. Arthur Welsh, M.B., Ch.M.

The following were appointed Honorary Demonstrators in Anatomy: Dr. L. Ambrovich, Dr. P. L. A. O'Halloran, Dr. E. W. Haggett and Mr. J. S. Baird, B.D.S.

Science Research Scholarships were awarded to Messrs. H. F. Benning (Psychology), W. E. Duncanson (Physics), C. W. M. Hart, B.A. (Anthropology), O. O. Pulley (Electrical Engineering) and Miss Doris Selby, B.Sc. (Zoology).

Post-Graduate Work.

SPECIAL LECTURES IN MELBOURNE.

THE Melbourne Permanent Committee for Post-Graduate Work announces that Professor H. Maclean, of Saint Thomas's Hospital, will give six evening post-graduate lectures at the Medical Society Hall, East Melbourne, between the dates of August 5 and 23, 1929, at 8.30 p.m. The titles of the lectures are as follows: (i) "Modern Views on Gastric Physiology and Pathology," (ii) "Diagnosis and Treatment of Gastric Disease," (iii) "Diagnosis and Treatment of Gastric Disease," (iv) "Some Problems in Carbohydrate Metabolism and Diabetes," (v) "Observations on Vascular and Renal Diseases," (vi) "The Uses and Abuses of Biochemical Methods in Clinical Medicine."

The fee for the course will be five guineas. Those who propose to attend, are invited to send an intimation of the fact together with the fee to the Honorary Secretaries, Dr. J. W. Dunbar Hooper and Dr. Harold R. Dew, 12, Collins Street, Melbourne, before the commencement of the course. Further details in regard to the exact date of each lecture will be published shortly.

The annual refresher course of post-graduate study will be held during the same period, namely from August 5 to August 23, 1929. The course will be planned on the same lines as in previous years. The time table is now being arranged and will be published at an early date. The fee for the course is three guineas. It is hoped that members will take advantage of the coincidence of the two courses and join both. The success of the previous annual courses need not be emphasized in this place.

Congress Notes.

AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

We have been requested by the Executive Committee of the third session of the Australasian Medical Congress

HOTELS IN SYDNEY.

Hotel.	Address.	Accommodation.			Tariff.	
		Persons	Rooms.		Per Day.	Per Week.
			Double.	Single.		
Aaron's Exchange ..	Gresham Street ..	21	3	15	10s. 6d. ¹	—
Adams's (Tattersall's) ..	259, Pitt Street ..	72	26	20	20s. to 22s.	£6 2s. 6d. to £7.
Acadia ..	Pitt Street ..	50	20	10	15s. 6d.	—
Australia ..	Castlereagh Street ..	200	80	60	From 15s.	—
Carlton ..	56, Castlereagh Street ..	45	15	15	22s. 6d.	—
Grand Central ..	Clarence Street ..	—	—	—	14s. ¹	—
Métropole ..	Bent Street ..	350	—	—	5s. to 7s. 6d. ²	—
Petty's ..	York Street ..	24	6	12	From 19s.	—
Sydney ..	Opposite Central Station ..	250	—	—	From 7s. ²	—
Usher's (Metropolitan) ..	64, Castlereagh Street ..	30	10	10	From 22s.	—
Wentworth ..	Church Hill ..	100	—	—	14s. 6d. ¹	—
Windsor ..	Park and Castlereagh Streets ..	28	10	8	13s. to 14s.	£4 3s. to £4 9s. 6d.
					19s. 6d. to 20s. 6d. ⁴	£6 3s. 6d. to £6 9s. 6d. ⁴
					From 25s.	—
					From 27s. 6d.	—
					From 17s.	£5 5s.

BOARDING HOUSES AND SUBURBAN HOTELS.

Hotel or Boarding House.	Address.	Accommodation.			Tariff.	
		Persons.	Rooms.		Per Day.	Per Week.
			Double.	Single.		
Belvedere ..	81, King's Cross Road, Darlinghurst ..	—	—	—	From 12s. 6d.	From £3 13s. 6d.
Bondi ..	Bondi Beach ..	35	15	5	—	£6 6s.
Cheverell's ..	Elizabeth Bay Road ..	—	—	—	—	£5 5s. ⁵
Clifton Gardens Hotel ..	Mosman ..	—	—	—	—	From £10 10s. to £14 14s. ⁶
Coogee Bay ..	Arden Street, Coogee ..	40	14	12	From 20s.	From £5 5s.
Hotel Mansions ..	Bayswater Road, Darlinghurst ..	60	25	10	16s. 6d.	From £6 6s.
International ..	Bondi Beach ..	22	6	10	From 21s.	From £5 5s.
Labrador ..	Macquarie Street ..	—	—	—	From 16s.	From £4 14s. 6d.
"52, Macleay Street" ..	Greenknow Avenue, Pott's Point ..	35	—	—	—	£5 5s. ⁸
Manly Hotel ..	Opposite Manly Wharf ..	—	—	—	From 21s.	£10 10s. ⁷
New Brighton ..	The Corso, Manly ..	—	—	—	—	£11 11s. ⁹
New Oriental Private Hotel ..	King's Cross ..	24	8	8	11s. 6d. to 13s. 6d.	From £16 16s. ⁶
Oceanic ..	Arden Street, Coogee ..	42	6	30	From 21s.	£6 6s.
Pacific ..	Ocean Beach, Manly ..	—	—	—	—	£3 3s. ¹
Steyne ..	The Corso, Manly ..	—	—	—	—	£5 5s. ⁴
Y.M.C.A. Hostel ..	325 to 327, Pitt Street ..	—	—	—	6s. 6d. ¹	£3 3s. to £4 4s.
Y.W.C.A. Hostel ..	189, Liverpool Street ..	—	—	—	4s. ²	From £6 6s.
						Terms on application.
						£7 7s.

¹ Bed and breakfast.
² Meals as taken.

³ Bed only.
⁴ Inclusive.

⁵ Single rooms
⁶ Suites for two people.

⁷ Double rooms.
⁸ Double rooms with bath.

(British Medical Association), Sydney, 1927, to remind members of the Branches of the British Medical Association in Australia and New Zealand that it is desirable for those who intend to take part in Congress, to enrol at an early date. Applications should be sent to the local secretaries in the State or Island in which the member resides, and should be accompanied by a remittance of the amount of the subscription. The subscription to Congress is two guineas; members residing in New South Wales who qualified prior to January 1, 1925, will pay three guineas.

Accommodation.

As the accommodation in hotels in Sydney and the immediate suburbs is limited, members who intend to be present at the third session of Congress, are advised to secure rooms at an early date. Application should be made to the manager of the hotel selected. If members have any difficulty in securing accommodation, they should communicate with the Honorary Secretary of the Hotels and Lodgings Committee, Dr. R. A. R. Green, 175, Macquarie Street, Sydney. The above list will be found useful.

Trade Exhibition.

The Trade Exhibition promises to be an interesting feature. It will be located in the rooms of the Anatomy

Department in the Medical School on the first and second floors. Much of the available space has already been taken by pharmaceutical firms, agents for surgical instruments, importers of X ray plant, book sellers and importers, manufacturers of foods and others.

Congress Dinner.

The Congress dinner will be held on Wednesday, September 4, 1929, at David Jones, Limited, Elizabeth Street. His Excellency Sir Dudley de Chair, Governor of New South Wales, has accepted the invitation of the Executive Committee to be present.

A PRIVATE HOSPITAL FOR PATIENTS SUFFERING FROM INFECTIVE DISEASES.

THE attention of the medical profession in New South Wales and particularly of Sydney and its suburbs is directed to a private hospital that has recently been opened for the reception of persons suffering from the notifiable infective diseases. We are persuaded that many patients would prefer to enter a private hospital than a public one

when required to submit to isolation, provided that the general arrangements, nursing and management are of a high order. Cooleen Hospital, Terry Road, West Ryde, New South Wales, is well recommended and should fulfil a very useful purpose.

Proceedings of the Australian Medical Boards.

VICTORIA.

THE undermentioned have been registered under the provisions of Part I of *The Medical Act, 1915*, of Victoria, as duly qualified medical practitioners:

Clemons, George Maxwell Wilmore, M.B., B.S., 1926 (Univ. Melbourne), St. George's Square, Launceston, Tasmania.

Eadie, Norman Menzies, L.R.C.P. et S. (Edinburgh), L.R.F.P.S. (Glasgow), 1926, Dip. L.O. (England), 1929, c.o. Dr. J. Eadie, Bendigo.

Ebsworth, John Francis, M.B., B.S., 1928 (Univ. Melbourne), Women's Hospital, Carlton.

Additional diploma registered:

Godbehear, Wesley George Catchlove, M.R.C.P. (London), 1927

Books Received.

NOTES ON CHRONIC OTORRHOEA WITH SPECIAL REFERENCE TO THE USE OF ZINC IONIZATION IN THE TREATMENT OF SELECTED CASES, by A. R. Friel, M.A., M.D. (Univ. Dublin), F.R.C.S.I.; 1929. Bristol: John Wright and Sons, Limited. Demy 8vo., pp. 95, with illustrations. Price: 6s. net.

Diary for the Month.

- MAY 7.—Tasmanian Branch, B.M.A.: Council.
 MAY 7.—Eye, Ear, Nose and Throat Section, South Australian Branch, B.M.A.
 MAY 8.—Central Northern Medical Association, New South Wales.
 MAY 9.—Victorian Branch, B.M.A.: Council.
 MAY 9.—Section of Orthopaedics, New South Wales Branch, B.M.A.
 MAY 10.—Queensland Branch, B.M.A.: Council.
 MAY 10.—Eastern Suburbs Medical Association, New South Wales.
 MAY 14.—Tasmanian Branch, B.M.A.: Branch.
 MAY 14.—New South Wales Branch, B.M.A.: Ethics Committee.
 MAY 15.—Western Australian Branch, B.M.A.: Branch.

Medical Appointments.

Dr. Gordon Carey Morrissey (B.M.A.) has been appointed Government Medical Officer at Ingham, Queensland, and a Health Officer for the purposes of *The Health Acts, 1900 to 1922*, of Queensland.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xviii.

ETHERIDGE DISTRICT HOSPITAL, GEORGETOWN: Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company, Limited. Phoenix Mutual Provident Society.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital. Boonah District Hospital.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia. Boomeroo Centre Medical Club.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Medical practitioners are requested not to apply for appointments to position at the Hobart General Hospital, Tasmania, without first having communicated with the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.